



Department of
Regional Studies
and Tourism

Journal of Regional Science and
Sustainable Development Economics



Emerging Carrier Business Models of Airlines: Case of Middle East Region

Iryna Heiets

Ph.D., Associate Professor,

National Aviation University
Air Transportation Management
Department

Vadym Konchyn

Ph.D., Associate Professor

Kyiv National Economic University
named after Vadym Hetman
Department of Regional Studies
and Tourism;
National Aviation University
Department of Air Transport Economics

Viktoria Svrydiuk

Master of Air Transportation
Technology

National Aviation University
Air Transportation Management
Department

ARTICLE INFO

Article history:

Received 28 March 2018

Received in revised form 10 April 2018

Accepted 15 April 2018

Available online

Language: English

Abstract. In this paper emerging carriers' business model is explored. The reason for this research became an observation of phenomena within the airline industry, in particular, a fast growth of Middle East region in terms of passenger transportation, due to incredible development of those carriers. The research subject is an airline business model, which has formed in the Middle East due to certain conditions inherent exactly to this region. The objective of this paper is to analyze the formation of regional emerging carrier business model under the certain market conditions and

December 2018 Volume 1 Number 1 ISSN:

Journal of Regional Science and Sustainable Development Economics

© Kyiv National Economic University named after Vadym Hetman Press

evaluate the potential ways to sustain this model. The literature review made it possible to highlight a plenty of research papers concerning actual business models regarded as suitable for estimation of airlines’ activity last decade. The tasks of our research are to find out a marketplace and market share of the Middle East emerging carriers in the world airline industry at main geographical regions; to analyze operational and financial indicators of regional emerging carriers (estimate their passenger flows, fleet structure, number of directions, ASK – available seat kilometers, RPK – revenue passenger kilometers, etc.); to inspect the factors that influence on the growth generating drivers of Middle East regional emerging carriers by means of multiple regression analysis (using the SPSS Statistics package); to take a strategic view of further development of the Middle East airlines regionally and globally.

Keywords: Emerging Carrier Business Model, Middle East emerging carriers (Emirates, Etihad and Qatar), Passenger volume, ASK, RPK and Fleet, Porter’s five forces of competitiveness.

Theoretical and Methodological Background of Business Models Definition

Thought the term business model was generated quickly, early publications, as well as new ones, were not properly explained in the conceptual framework. In general reviews it was related to a conceptual tool (Osterwalder, 2004; Osterwalder, Pigneur, and Tucci, 2005; Teece, 2010), a method (Afuah and Tucci, 2000), a pattern (Brousseau and Penard, 2006), a structural template (Amit and Zott, 2001), a framework (Afuah, 2004), etc. (see Table 1 below for the most widely spread definitions from 2001 to 2011).

Table 1

Business model definitions` overview

Definition	Author(s), Year	Publication/Papers	Contribution
1	2	3	4
The business model as a statement of how a firm will make money and sustain its profit stream over time.”	Stewart and Zhao, 2000	Stewart DW, Zhao Q. Internet marketing, business models, and public policy. J Public Policy Mark, 2000	Examination the Internet role in marketing in the context of business models.
Business model depicts the content, structure, and governance of transactions	Amit and Zott, 2001	Value Creation in E-business; Zott and Amit, 2010	First construction of the Business Model concept

Continue Table 1

1	2	3	4
designed so as to create value through the exploitation of business opportunities.			
A business model is a concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets.	Morris et al., 2005	Michael Morris, Minet Schindehutte, Jeffrey Allen. <i>Journal of Business Research</i> , 2003.	Synthesis and review of literature, emphasis of the core issues
Business model articulates the logic and provides data and other evidence that demonstrates how a business creates and deliver values to customers. It also outlines the architecture of revenues, costs, and profits associated with the business enterprise delivering that value.	Teece, 2010	<i>Business Models, Business Strategy and Innovation, Long Range Planning</i> , 2010.	Creation of value through business models
A business model describes the value logic of an organization in terms of how it creates and captures customer value	Fielt, 2011	Understanding business models (Business Service Management white paper volume 3). Brisbane, Australia: Smart Services CRC, 2011.	Business model approach to create and capture customer value

Authors explaining a business model as an essential framework of the company activity, highlight its certain managerial methods and the way the build relationships with its customers (Afuah and Tucci, 2000). Those researches showed competitive sides of homogeneous field companies. They

described a company strategy and a business model applied in it. The objective function is such model equation was usually profitability, while it included industry causes, market position, resources and operational activity.

Nevertheless, in the work of Afuah and Tucci (2000) the business model explanation was rather empirical. Few years after Zott and Amit (2007) described a business model as an organizational design in company performance. This bond is analyzed by taking two causal derivatives: the grand total value potential of the business model design and the company actual result of gaining this value. Amit and Zott referred company performance with its business model but consider it as an independent variable.

Relation ties between business model design and company performance have also described at their work Giesen, Herman, Bell and Biltz (2007). Though they focused more on innovative models, they distinguished three different types of business models: enterprise model (organizational structure and its flexible innovations are key contributors to value), revenue model (innovations in methods of generating value that company applies) and industry model (supply chain innovations). Interesting outcome of this research was also about the collaboration success and the company maturity. It stated that innovations in business models that involve collaboration, market share, and multilateral/bilateral agreement are more effective in mature rather than young developing companies.

Business model and company strategy are equalized in some researches, though one is a part of another. Christensen (2001) research described positive impact of relevant business model strategy and the way it differs from a company's product-market position. He finds that success of companies with similar products strategies and target customers can be accessible with different business models. The same point of view is described in Zott and Amit (2008), this paper stated business model and strategy as a complement, not substitute variables.

A distinctive feature of a business model is support of cooperation and alliance creation, due to the additional value that can bring (Magretta, 2002). Tight cooperation with business partners (stakeholders like suppliers of raw materials or required service, forwarding or outsource logistics, etc.). On the contrary, product-market strategy is aimed at competition. Value should be captured and maintained. Company usually relies on the benchmark to sustain the value on appropriate level.

The prima facie role of strategy is the chasing advantage in front of competitor (Mansfield and Fourie, 2004). Different researches emphasize within business model are described below in Table 2

Table 2

Description of business model researches by themes they embrace

Author	Themes embraced by business model
Stewart and Zhao, 2000	<ul style="list-style-type: none"> • Customer selection • Value capture • Differentiation and strategic control • Scope
Amit and Zott, 2001	<ul style="list-style-type: none"> • Participants (firm of interest, customers, suppliers, and allies) • Relationships • Value capture • Flows (money, information, product, or service)
Morris et al., 2005	<ul style="list-style-type: none"> • Strategic level • Operational level • Economical level
Teece, 2010	<ul style="list-style-type: none"> • Value proposition (product and service; customer needs; geography) • Revenue model (pricing logic; distributive channels; customer interaction) • Cost model (core assets and capabilities; core activities; partner network)
Wirtz, 2011	<ul style="list-style-type: none"> • Strategy-oriented approaches • Organization-oriented approaches • Technology-oriented approaches

Other important factor of business model distinction is customer orientation. Chesbrough and Rosenbloom (2002) pointed a strong positive trend of customer-oriented business models, which spin around a general condemn and philosophy of the company.

Even though so many researches stated about the conceptual difference between business model and strategy, scientists agreed that a business model plays a solid role in strategy formation. In 2008, Richardson paper explained that a business model runs the whole business processes. That is why it directly influences the strategy. As it can be seen, value capture was mentioned in earlier research

(Stewart and Zhao, 2000; Amit and Zott, 2001), and Teece (2010) research of its proportion together with the revenue model and cost model. Level-built business model mentioned by Morris et al. (2005) and approach-oriented study of Wirtz (2011) contributed to the whole definition research of *business model*.

Making summary of the strategy and business model the following issues were resumed: dependence of company performance on business model; process of value adding through company business model; difference between business model and product strategy.

Airline Business Models: Types, Advantages and Disadvantages

From the theory part about a model in general and definition of a business model, it can be assumed that defining a business model inside a particular industry is quite controversial. Airline industry tends to simplify classification and push out complexity.

Each airline possesses a particular business model either it is jointed or not (Chesbrough, 2006; Teece, 2010). In Teece`s research (2010) business models are essential due to very differentiated economies with certain customers` decision-making patterns, costs transactions and strict competition within one market.

Airlines are usually classified according to the character of transportation object: passenger (Ryanair), cargo (FedEx), or combined (Southwest Airline). The third type is the most spread because airlines usually provide both passenger and cargo service.

According to another approach, airlines are divided into scheduled (Emirates) and non-scheduled (Condor).

According to the BTS (Bureau of Transportation Statistics) classification, there are operating business and revenue-based models of carriers. This classification was updated by Chellappa et al. (2011), hence pricing based model appeared in a row.

A lot of carrier classifications have appeared because of market change. Highly controlled state-owned airlines have faced with a multiple competition after the deregulation and new airline models appeared.

Airline business models were changing over time. Nowadays, the following business models exist:

1. *Full-service network carriers (FSNC) or Legacy (Flag) carriers* (hub-and-spoke carriers such as British Airways).
2. *Low-cost carriers (LCC)* (point-to-point and value for money carriers with low-fare policy e.g. Flydubai).
3. *Regional carriers* (widespread among both FSNC and LCC).
4. *Charter carriers* (related to European carriers, which offer seat-only or comprehensive block-seat packages for tourism).
5. *Jet providers* (in contrary to charters, it is mostly related to the continental U.S. market).
6. *Business aviation* (in 50 percent of research it is not considered as a separate business model, it is usually spread among mentioned above types).

Still, if operational characteristics are taken into account there will be only three types of general business models as appropriate for consideration: FSNC and LCC models for scheduled flights, as well as Charter carriers models for non-scheduled flights (Cento, 2008; Lordan, Sallan & Simo, 2014).

Full-Service Network Carrier

Full-service network carriers (FSNC) or also known as a «legacy carrier» - is an airline business model that ensure a full span of air transportation services either on the ground or in-flight. Full-service carriers are often flag airlines or they were privatized being a former national carrier in past (Reichmuth et al. 2008, Wulf, Maissner, Brands & Maul 2010, Wulf, Meissner 2011).

FSNC offers its customer high frequency, convenient departure/arrival windows, good connectivity within its network and different price segmentation.

Full-service network carrier operates a hub-and-spoke (HS) routing system. This network arranges a vast number of directions with airline initial point in center. This forms O-D (origin-destination) net within HS system, which allows «spoke» points to reach better price and service, while «hub» gets more flights variations.

To increase the network and a number of «spokes» FSNCs tend to create merges, alliances, interline and codeshare agreements. Big alliances are created with the aim of competition smoothing, a growth of traffic, etc. With alliance development, the FSNCs fares also grow, hence alliance consolidations negatively influence on the customer paying ability (Brueckner and Pels, 2004).

The main focal points of the FSNC strategy are labor costs lessening, raise of productivity and partnership with outsource firms (catering, maintenance, cleaning, ground handling, etc.).

In conditions of tight market competition and gaining a primary place in a niche, FSNCs applies head-to-head strategy on its short-haul destinations (duplicating LCC strategy). In this case, company uses its advantage of convenient slot allocation at the airport, leaving LCC out of domination in this airport.

The elements included to FSNC operation costs such as baggage weight and a number of pieces, seat allocation and trap corridors installation influence on the total operation cost (due to increasing of the turnaround time, which LCC model does not include). Hence this, FSNC put this costs on optimization as much as it possible.

Low-cost Carrier

Two decades ago Low-cost carrier or LCC was accepted uncertainly by the traditional airline market under unfruitful market situation (Aldamari and Fagan, 2005).

Williams (2002) stated that LCC referred to a non-scheduled no-frills carrier that put low price in the center of its strategy. LCC serves leisure and business customers in its majority. According to Dobruszkes (2013), LCC model cannot be defined certainly and it has many different levels, because of economies types' variety. European LCCs are highly targeted on serving regional airports located next to tourism heritage. Here, low-costs stumble direct competition with FSNCs and sometimes charter carriers, as their tourism customer segment also covers those airports. All in all, LCCs still have their unoccupied niche, focusing on point-to-point (PP) routing system.

According to Gillen and Ashish (2004) an important driver for LCC development and vanquishing customer adherence became deregulation of airline market. Till 2010 low-costs gained the expected 30% of the shortfall market.

The business model engraved a framework of cost leadership (in 2009 Ryanair's unit costs were 55% lower than AirFrance/KLM and 63% lower than SAS) that paralleled operational simplicity and high productivity (aircraft and employee) together with no frills. In 2009 the low-cost carriers transported over 520 million passengers worldwide (in 2005 this number was near 300 million).

They grew in traffic due to: new demand stimulation and substitute traffic (by diverting passenger from FSNCs). Skeels (2005) confirmed that 37% of LCCs customers are those who refused from FSNC

service for LCC, 59% of customers were stimulated by demand, while later that digit raised to 71%. O'Connell and Williams (2007) discovered that LCCs have taken up to 60% of annual growth from FSNC, which explained why full-service has been constantly losing the percentage of traffic. By 2009 low-cost market comprised of 41% in the European market, 27% - North America, 18% - Asia Pacific, 8% - South America and only 1% of the Middle East market (Dunn, Govindasamy and Ranson, 2009; Aviation Strategy, March 2010).

Point-to-point is a strategy that helped LCC to occupy its niche (see Fig. 1). Low-costs stay efficient due to their fuel preserving fleet, high load factor and good revenue management. Short-haul flights between regional airports are not operationally efficient due to the high take-off/landing fuel consumption. Take-off/landing fuel consumption composes a higher percentage of short-haul flights in comparison to long-haul, but still, the net fuel consumption is lower and price attractiveness fulfils the demand.

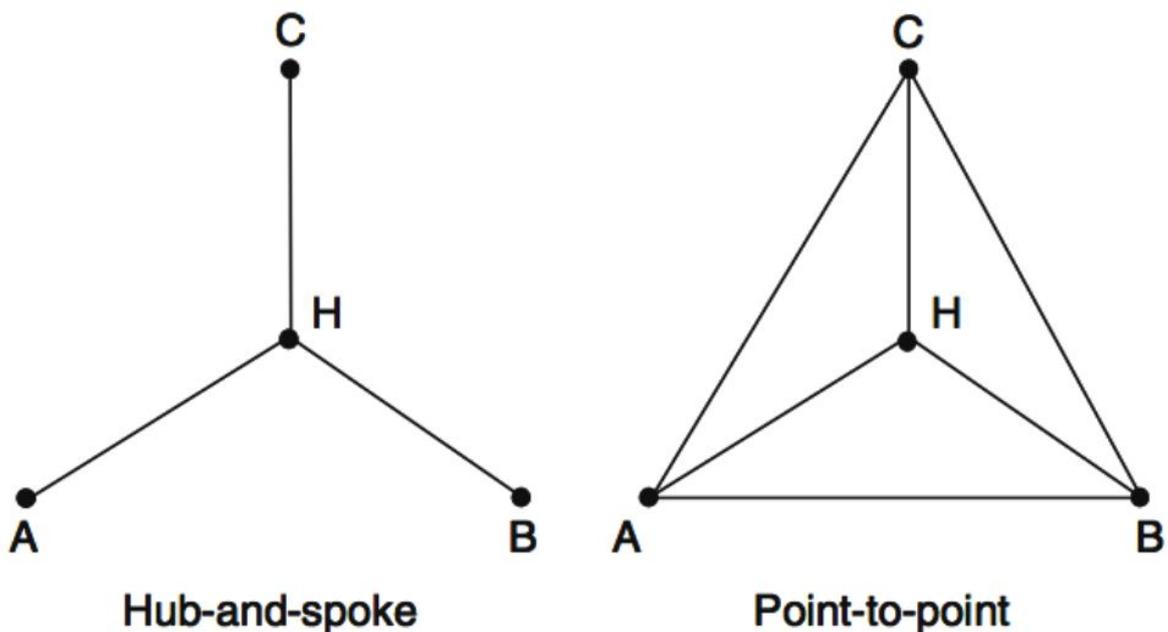


Fig. 1. Scheme of HS and PP routing system configuration.

The core logic of LCC is definitely price, so reduction of fare to the lowest possible margin is the main objective for LCC business model (Hunter, 2006).

Low price policy is justified by cutting operation costs such as fuel consumption, maintenance, airport charge, in-flight service, etc. At the same time revenue can be gained through the following: sale of baggage place (which is not initially included to the ticket fare), sale of additional services on board, homogeneous and fuel-efficient fleet, quick ground handling and short turnaround time, regional airports (smaller airport charge and maintenance costs), no travel agents (online ticketing), no ticket refunds, staff costs cutting, etc. (Reichmuth et al. 2008). Though, competition inside LCC market makes some low-costs to apply differentiation policy (an example can be including of onboard food/snacks/drinks).

Fast network development, quick enlargement of nodes (to create PP pairs with central airport), dense frequency on routes with high LF are essential in the LCC competition strategy within both LCC and FSC markets.

PP routing system and short-haul (or mid-haul) flights are exploited by low-costs because of long-haul services ineffectiveness. Association of European Airlines (AEA) defines long-haul flight as a 6-hours-flight or more. Travel time exceeding 4 hours requires from an airline a minimum in-flight service, entertainment, baggage included, etc. Nevertheless, long-haul flight bears hub airport handling (Graham, Niegel, Ison, Humphreys, 2007). All those things are slightly compatible with the LCC strategy to minimize operation costs, hence LCCs lose more than win.

For the same reason, LCC operates passenger transportation, not cargo or mixed transportation because it takes additional turnaround time, which LCCs strive to decrease.

The problem of long-haul flights is in increasing of operation costs and falling of unit costs. Today wide-body aircraft (A380, B767, B777) are able to keep unit costs steady, so choosing two-three types of aircraft will sustain fleet unified and solve problem with long-haul flights.

Wenseveen (2007) see the way out for long-haul flights and LCC model in finding of niche markets and their opportunity to connect adjacent markets as well.

Charter Carrier

Charter carrier (CC) - airline business model performing non-scheduled flights that carry a certain group of people (leisure passenger, tour groups, military division, sports team, etc.)

Tickets on charter flights are realized through the tour agencies which book a flight of block-seats for a particular flight. Charter tickets are rarely sold separately from the tour. They are included in the tour package in general.

European FSNCs practice vertically integrated divisions within the organization structure. Vertically integrated division consolidates tour agencies, ticketing agent and airline (Condor, Martin Air).

An issue for charter carriers (CCs) is seat occupancy. Seats are usually in dense configuration and load factor (LF) is high, hence the unit cost is low. LF on charters tends to reach almost 100 percent. Moreover, if the company set a high margin of seat occupancy (it is higher than LCC and FSNC occupancy), and it is not fulfilled the flight will be transferred to another date or cancelled at all.

As a rule, cancellation of charter ticket bares more strict penalties that full-service carrier (the ticket is not refundable).

Business model comparison (FSNC, LCC and CC)

Analyzed literature showed that each carrier strategy has ten elements that form competition in deregulation conditions. They are:

- price;
- frequency and departure time;
- route network type;
- alliances and merges;
- FFP (frequent flier program);
- GDS (global distribution system);
- travel agency charges;
- innovation technologies;
- quality management;
- HR (human resources).

Taking into consideration focal elements, the comparison table for LCC, FSNC, and Charter airline business models has been created (see *Table 3*).

Table 3

Business model comparison

Airline business model Comparison Element	Full-Service Network Carrier	Low-cost Carrier	Charter Carrier
1	2	3	4
Price	Full-fare ticket	Low-fare ticket (price is cheaper while booking in advance)	Low-fare ticket (price becomes cheaper closer to departure)
Frequency and departure time	High frequency and flight flexibility	Low flight frequency and short turnaround time	Seasonal frequency, short turnaround time, irregular and inconvenient departures
Route network type (see Fig. 1.3)	<ul style="list-style-type: none"> • Hub-and-spoke, multi-hub-and-spoke; • Mid- and long-haul flights; • Primary large-scale hub airports 	<ul style="list-style-type: none"> • Point-to-point; • No connecting, mostly short-haul flights; • Regional small airports 	<ul style="list-style-type: none"> • Point-to-point; • No-frill flights; • Secondary small and mid-size airports
Frequent flier program (FFP)	Wide frequent flier programs	No	No
Inventory management	Travel agents, feeder routes, in-flight service and pre-arranged seat allocation	E-tickets, internet booking, no travel agencies	Travel agencies, block-seat allocation, holiday packages (hotel + transportation + activities)

1	2	3	4
Revenue source	Business and high-level travel passengers	Leisure and business passengers, advertising on seat-back trays, head rests, aircraft exterior, car rentals, travel insurance and travel reservation services	Tourism passengers (known as leisure traffic)
General strategy	<ul style="list-style-type: none"> • Reduction of the labor costs; • Increasing of productivity; • Transfer service to regional partners; alliances; • Hiring new staff on less generous contracts; • Outsourcing more activities (catering, ground handling, and aircraft maintenance). 	<ul style="list-style-type: none"> • Minimize turnaround • Time; • Increase flying hours; • Maximize aircraft utilization and increment the number of seats in the aircrafts to the maximum available. 	<ul style="list-style-type: none"> • Air service provider for leisure holidays purpose; • Flight cancelation if it will be non-profitable; • Cooperation and outsource.

Alternative Approach to defining the Airline Business Models: Innovations, Flexible, Hybrid, and Emerging Carrier Business Models

Zott and Amit (2007) distinguish a business models concerning innovations, and their correlation as a separate variable. Thus, Wirtz et al. (2010) find out the connection of commerce and business models opposite to the ordinary classification. Gaining profit is a core of business, while commercialization is considered in the context of innovation application.

To be clearly sure about the tie between business model and innovations, a deeper research and more estimation-based calculations should be done. One of the classifications of innovations represents the following partition:

- a) Technological Innovation
- b) Process Innovation
- c) Product & Service Innovation, and
- d) Business Model Innovation

According to Teece (2010) modern innovations inevitably influence the business model, as it defines a consumer paying ability and desire to possess a certain kind of innovative service.

Airline industry modifies quickly involving more and more innovative approaches. Innovations are inextricably linked with technologies advent. Airlines applied online ticket booking, because of high demand, cut of indirect costs, convenience and process simplification. The same with phone check-in (queues diminution), on-board fax machines (firstly applied by SIA, Singapore International Airlines), video screens and telephone services, as well as innovative facilities for cargo handling/tracking like modern RFID (Radio Frequency IDentification) and big data collection.

Additionally, to the airline industry growth, IT sphere has become as important as travel product itself. Amadeus report stated that this factor will be critical in airline service distribution, disruptive innovation and differentiating feature in a highly competitive market.

A few years ago, a lot of airlines offered ancillary service like priority seating, online check-in and baggage drop-off, etc. Today airlines` websites are fully stuffed with a special promotion, miles collecting through the FFPs, extra leg-rooms, etc. All these innovative features play an essential role in differentiating.

Flexible business model

Incremental or disruptive innovation – is the process of unbreakable performance improvement, product or service modification and ability of the company`s business model to be flexible.

Flexible airline business model has its own set of priorities that can shift an operating model in case of market change. Flexible model is based on company`s core competencies (determinant variable).

According to the literature review *core competencies* are distinctive (combination of marginal and background competencies), background (with large share proportion of resources), and marginal (without firm competitive feature). According to the airline business model analysis made by Nair Palacios, Segura (2011) on the data of Airline Skytrax 2010, the following industry ranking was shown (see Fig. 2).

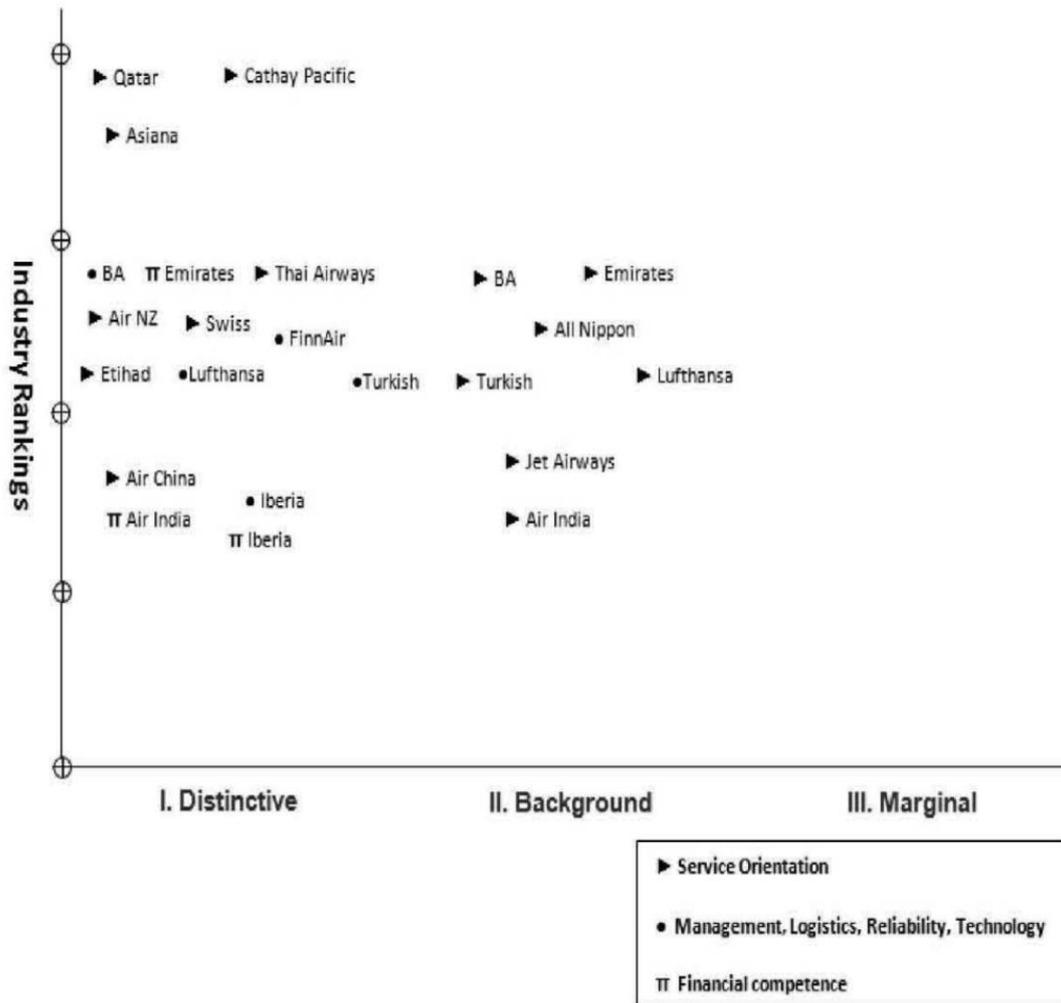


Fig. 2. Airlines ranking by core competencies on the basis of Skytrax 2010 data (vertical axis shows the value of product/service quality) (Nair et al., 2011)

From this diagram can be clearly seen that companies with service orientation (Cathay Pacific, Qatar, Asiana) had higher ranking position, whilst airlines with financial competencies (Air India, Air India, Iberia) had lower ranking position.

Iberia) lower one. Middle-East and some of the Asian carriers created an image of strong high-quality-service airlines.

Service orientation is their distinctive core competence, whilst European and American prefer such core competencies as management, logistics, reliability, technology.

Newly born airlines benefit from flexible strategy application because they step aside from indebtedness and traditional business models. According to Franke (2007) the appearance of new airline models, assuming that flexibility of the model should stay around core competency sustained with innovative approach.

Hybrid business model

Competition within airline industry had no more ways to develop. There were full service and low-cost carriers that significantly occupied all existing markets. That led to the appearance of the new business model.

«Hybrid» model – is such airline type which assumes elements of traditional and low-cost carrier simultaneously (Lawton and Solomko, 2005).

In the time of strong airline development FSNCs saw the LCCs advantage priority and high demand they get on their supply, hence many of full service started exploitation of LCC model. At the same time with the LCC model development, carriers realized that offering only short-haul flights and low frequency they will not gain an appropriate market niche. These resulted some low-cost carriers started to expand fleet variety to wide-body aircraft and served all passenger segments (Shaw and Thomas, 2006, Lawton and Solomko, 2005) .

LCCs concentrated on the customer segmentation, while FSNCs on fare reduction and online ticketing distribution. This innovation model got a wide application in almost every region.

Franke and John (2011) highlighted that the appearance of new business models has been accelerated. Low-cost carriers started to operate in hubs (EasyJet started hub penetration activity) and offer connecting flights (Air Asia), apply frequent flier programs (Wizz Air) and make in-flight service (Air Berlin).

Emerging carrier business model as a regional airline industry paradigm

The term *emerging carrier business model* has evolved in the beginning of 21 century, and implies arranged airline business by group of airlines based in the Middle East Region. The Middle East region

is defined by countries in the Arabian Gulf, but in airline industry, it is fair to include also Levant and Turkey here.

First time the airlines attracted the world eye to their operating in Paris, where they have ordered record number of wide-body airplanes. The appearance of Middle East carriers which had 10 or more percent of annual growth for the period of 5 years was recorded by that certain term «Emerging Carrier». Media sources and research studies covered three main Middle East carriers with «emerging carrier» definition: Emirates, Etihad and Qatar. Apparently, Turkish Airlines is fair to be placed in a row (but for objective reasons it will not be widely described in further research).

Advantages of emerging carriers that ensured a firm growth and stability in crisis times:

1. *Geographic location.* Operating as a mid-point between continents (Asia, Africa, and Europe), Middle East region is located just within 8-hour-flight accessibility of almost 80 percent of the global population. (O'Connell, John F. (2011)).
2. *Connecting market.* Following the previous advantage, Persian Gulf carrier aggregate passenger and cargo flows offering one-stop service. Rich South Africa with high GDP and travel potential, growing Asian and African countries are to become main sources of passenger flow in a few years.
3. *Governmental policy.* Quick expansion of emerging carriers is also caused by the governmental tax-free policy. Protectionism of legacy carriers prevents other carriers from significant penetration. It resulted in a high operating margin and rising LF (80% in average) of airlines on routes with low competition.
4. *Wide-body aircraft fleet.* Using mostly large modifications of aircraft allowed to increase ASK with a steady increase in flights number. This fleet difference in comparison to European FSNCs is also caused by the geographical location. While in Europe shoe-haul flights are more frequent, emerging carriers operate those fewer. Low unit costs are gained due to a large number of wide-body aircraft too. It also makes benefit in short slots in congested airports. The average age of European fleet is 10-12 years, while the emerging carriers maintain it for 6 years. Purchasing activity of new aircraft modifications is very high. Each year Airbus and Boeing bureaus receive pretty fruitful orders from emerging carriers.

5. *Costs reduction due to the low fuel prices and cheap labor resources.* Personnel compose the biggest economy for emerging carriers due to the cheap labor from the Indian subcontinent (though it is costly at the top-management level than it is in Europe).

Background of aviation sector in the Middle East

The core driver for aviation development in Middle East region has become oil reservoirs discovery in 40s of the XX century. This laid to a legacy (state-owned) forms of airlines, which were dissolved by private ones only after deregulation. Newcomer exploited low-cost strategies in their majority (so far it was low-costs even ahead of Southwest LCC model).

As for nowadays long-haul airline market of this region is represented by Emirates, Qatar, Etihad and Turkish airlines. They were developing for a long time, though they had a large network and enough resources, LCC such as Gulf Air were serious competitors for years. A «stumble stone» for Middle East LCCs were narrow-body aircraft and short-haul service, which were not a good fit in this region. Strong domestic competition formed the best airline model for this region.

With the appearance of wide-body aircrafts in the 2000`s Middle East carriers placed them into their network operation. In times of world financial crisis and almost every industry loss, Emirates stated positive financial results for the fiscal year. That time the question of why it did not lose passengers in hard economic situation has emerged.

Vespermann et al. (2008) summarized that Middle East carriers accessed their customers from three main markets: 1 - within and from the Middle East; 2 - to the Middle East from nearby; 3 - long-haul connection (Europe-Asia, Asia-Asia Pacific).

The last condition actually formed the whole concept of the emerging carrier in the last two decades of the airline market.

Our analysis of Emerging Middle East Carriers in the global airline industry we conduct taking into consideration the logic of former fundamental empirical papers to this topic (Karim Al-Sayeh,2014), as well as statistic database sources and sectoral reports/reviews.

Table 4 and *Table 5* show the particular feature of the Emerging carriers in the Middle East region. Their annual growth rate is equal 10% in ASK, RPK, passenger flow and fleet size.

Even due to the economic crisis emerging carriers were able to reach 10% annual growth. The only exception became RPK indicator during 2012 - 2016, which is caused by the slowing of airline industry growth in general.

Table 4

Passenger volume, ASK, RPK and Fleet size of Emerging Carrier in 2012 and 2016

	Emirates		Etihad		Qatar		Total	
	2012	2016	2012	2016	2012	2016	2012	2016
ASK (millions)	292,763	368,102	79,942	113,9	68,72	151,98	441,425	633,982
RPK (millions)	231,284	276,608	59,957	83,2	81,914	114,464	373,155	474,272
Passengers (millions)	39,3	56,0	10,0	18,5	21,0	26,65	70,3	101,15
Fleet Size	199	244	77	122	124	209	400	575

Table 5

Passenger volume, ASK, RPK and Fleet size % of change of Emerging Carrier in 2012 and 2016

	Emirates	Etihad	Qatar	Average annual % of change	
				2012 - 2016	2007 - 2012
ASK	6,4%	10,6%	30,1%	15,7%	17,9%
RPK	5,2%	9,7%	10%	8,3%	18,4%
Passengers	10,6%	21,3%	6,7%	12,9%	14,6%
Fleet Size	5,6%	14,6%	17%	12,4%	13,7%

Almost 75% of all emerging carriers' fleet are composed of wide-body aircraft. The emerging carriers are one of the earliest and largest buyers of A350, A380, B777, B787-Dreamliner.

To be precise Turkish is the only emerging carrier possessing more narrow-body than wide-body aircraft. It is explained by the frequency Turkish Airlines performs in the European market. O'Connell in his book mentioned that 22 members of AACO (Arab Air Carriers Organization) have captured 8% of global traffic and 23% of wide-body from both aircraft manufacturers, the majority of which are on Emirates, Etihad and Qatar airlines disposal (Air Transport in the 21st Century, O'Connell and Williams, 2011).

Emerging carriers of the Arabian Gulf are not aimed at domestic market development yet. When typical FSNC model foresees regional destination to fill long-haul and mid-haul flights, emerging carriers fill long-haul with another long-haul flight adding extra seat miles (kilometers). It is caused by high density of carriers within the Middle East region and small population, i.e. small domestic passenger market. Way out of the long-haul filling with long-haul inside hub-and-spoke routing system was exploited before by Cathay Pacific (among the first carriers applied HS routing system delivering long-haul).

Emerging carriers' appearance within the Middle East region is not a coincidence due to the country policies they are based in. Favorable taxes and cheaper labor conditions (than in Europe for example) gave a favor and fruitful background to develop here.

General Characteristic of the Middle East carriers' market

Over the last decade, Middle East's emerging carriers showed an excellent growth in flights and passenger number. It is justified by the fact that over 80% of the planet population is located in 7 hour-flight from the Middle East region.

Evolution of emerging carriers was long and steady. It started in the second mid-part of XX century from the Gulf Air appearance and its further dissolution (all carriers were originated from Gulf Air, see *Fig. 3*). Gulf Air was initiated by Freddie Bosworth, a British former RAF pilot, as a private shareholding company (since that time air industry of Middle East, including emerging carriers, have dealt with British management, so far). It had scheduled flights to Doha, Sharjah, and Dhahran in Saudi Arabia.

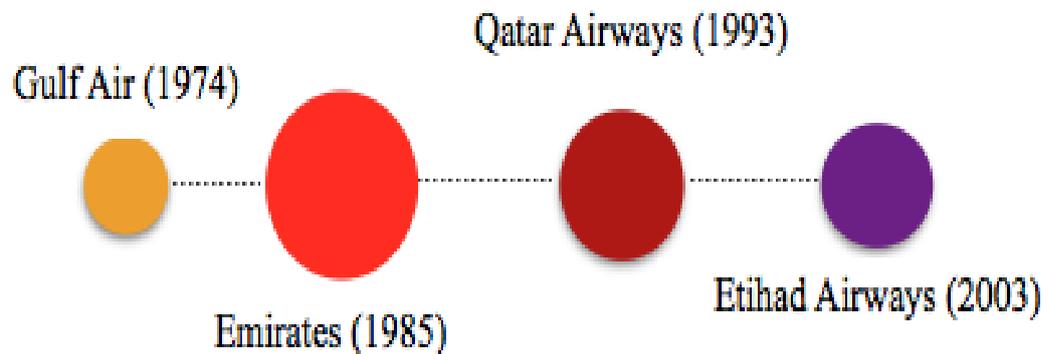


Fig. 3. Order of emerging carriers' appearance

Further, it was bought by Bahrain, Qatar, the UAE and Oman governments and enjoyed quick development. Facing some problems with hub settling and misunderstanding with Gulf management, UAE government established the connection from Dubai airport to Karachi. The first flight of the newly born airline (Emirates) departed in 1985. In 1993 Qatar branched from Gulf Air and established own carriers. Etihad became independent at the beginning of the new century (2003). Oman became the last county among creators that withdraw from Gulf Air (2007).

It made Gulf Air weak, though it is operating nowadays with the help of current Emirates and Etihad CEO.

In 2015 Emirates revenues reached \$25 billions with corresponding \$2,6 billions of profit. Upcoming, but still less significant results two other carriers (Qatar and Etihad) have reached. In 2015 emerging carriers reached 77% of Middle East region revenues among other carriers.

According to the ICAO report 2016, all global regions showed positive trend with average 6.4% of increment: it is 0.2% percentage points higher than in 2015. (Source: "2016: Air Transport Yearly Monitor (Preliminary) World Results and Analyses for the Full Year 2016"). Nevertheless, the Middle East region showed the record +13.4% of growth (the highest improvement over few years in the industry). According Middle East pax traffic remains under pressure. RPK (revenue passenger kilometers) of Middle East region shows positive trend (see Fig.4): it grew by 7.3% in H1 2017 (to the same period a year ago), the last worst rate of RPK was in H1 2003.

Nevertheless, growth of RPK directly shows turnover of international flows by regions that trended down at 6% annually since the beginning of 2017.



Fig. 4. Market share and Year-on-Year growth of air industry regions

Regional comparison of worldwide traffic flows in 2015 showed passenger traffic growth by 6.7% in 2015 (global GDP grew by 3.1% in the same year). IATA reported that total passengers carried by airlines were 3,5 billion (8.8% more than in 2014).

Historical air traffic growth has its long-term perspective and will be maintained through the next 4-5 years (say IATA). Average LF (near 79-81%) justifies the fact that airlines keep firm supply without over capacity (golden market rule - supply matches demand) (Source: “Tony Tyler Director General & CEO International Air Transport Association Annual Review 2015”).

Middle East (+10,9%) and Asia (8,9%) region tend to maintain their growing RPK traffic as can be seen from *Table 6*. European flow grew by 6.2% and North America by 4.7% due to its dense domestic market. Latin America and Africa showed lower increment than other regions in passenger number, though Latin America had high RPK rate.

Table 6

Traffic performance by regions in 2015

Region	Passenger traffic (million RPK & YoY Growth)		Load Factors (% and YoY Growth)		Passenger Number (in million and YoY)	
Africa	92,818	2.7%	68.2	0.2%	34	3.5%
Asia Pacific	1,954,254	8.9%	79.6	1.5%	1,035	8.4%
Europe	1,714,827	4.9%	83.2	0.8%	868	6.2%
Latin America	273,305	7.8%	80.0	0.4%	181	4.3%
Middle East	598,380	10.9%	77.1	-1.8%	173	9.9%
North America	1,669,165	4.8%	83.7	0.3%	924	4.7%
Grand Total	6,302,749	6.7%	81.2	0.5%	3,215	6.5%

As for the traffic between Middle East and America, it keeps slowing (see Fig. 5).



Fig. 5. Scheduled traffic between the Middle East and North America

Despite the Middle East - North America downtrend, this region remained one of the superior influencers. It raised its significance in the global market and either with domestic. So far, this region has become a significant player in the world scale, it has also raised its significance within itself.

Domestic market of the Middle East is quite wide; it still suffers the surplus of airlines within it. A number of passengers through the Middle East region is represented in *Table 7*.

Table 7

Number of passengers carried by emerging carriers from FY 2015 to FY 2017, millions

	Number of passengers, millions				
	2012	2013	2014	2015	2016
Emirates	39,3	43,9	45,0	51,3	56,0
Qatar	10,0	11,5	14,8	17,4	18,5
Etihad	21,0	23,1	22,0	22,35	26,65
Grand Total	70,3	78,5	81,8	91,05	101,15

Still, the main idea of the emerging carrier model is a crossroad connecting flights between continents (Europe, Asia, and America). Market share of each of these carriers was increasing hastily. The *Table 8* describes a whole picture of the Middle East carriers traffic by regions in 10-year retrospective.

To point the biggest growth in the quantity of flight by all three emerging carriers it is definitely the Americas` destination. It showed 114.3 percent of growth between 2007 and 2012, and 90 percent - between 2012 and 2017, which comprises 475 percent of the total destination number between 2007 and 2017.

Flights to North America was almost 3 times bigger in 2013 that it was in 2004 (from 4,000 to 14,000). By September 2013, connection with North America comprised 57% of flights performed by emerging carriers. Due to wide-body aircraft (A380 and B787-Dreamliner), they resulted in 63% of ASK at that market.

Table 8

Number of emerging carriers' destinations by regions in 2007, 2012, and 2017, as well as the percentage of its change

Region	2007			Total dest.	2012			Total dest.	% of change	2017			Total dest.	% of change
	EK	EY	QR		EK	EY	QR			EK	EY	QR		
Asia	39	26	43	108	46	43	55	144	33.3	58	52	59	169	17.4
Europe	22	9	17	48	32	15	31	78	62.5	38	25	46	109	39.7
Africa	16	4	14	34	20	8	19	47	38.2	21	11	25	57	21.3
Americas	4	2	2	8	11	3	6	20	114.3	13	12	13	38	90.0
Oceania	6	2	-	8	7	3	2	12	50.0	6	4	4	14	16.7
Total	87	43	76	206	116	72	113	301	46.1	136	104	147	387	28.6

(Source: created by authors)

The dynamics of destination number distributed between Asia, Europe, Africa, Americas and Oceania regions are shown in *Fig. 6*. The biggest operation is within Asia region for sure. It has a historical and territorial background. Asia population accumulates 50% of world inhabitants. Concerning the % of overall change, Americas remains at the first place in 2012 (114.3% of change to 2007) as well as in 2017 (90% of change to 2012).

Besides the travel potential of Asia-Pacific region is fast developing and promising. Good connectivity of the Middle East and Asia-Pacific supplies constantly growing traffic and large market share of emerging and legacy carriers as well.

As for the European destination, the total number of flights to this region almost tripled over the last 10 years. Traffic average growth (near 10%), was a bit poor only in 2012-2013 because of large competition with legacy carriers.

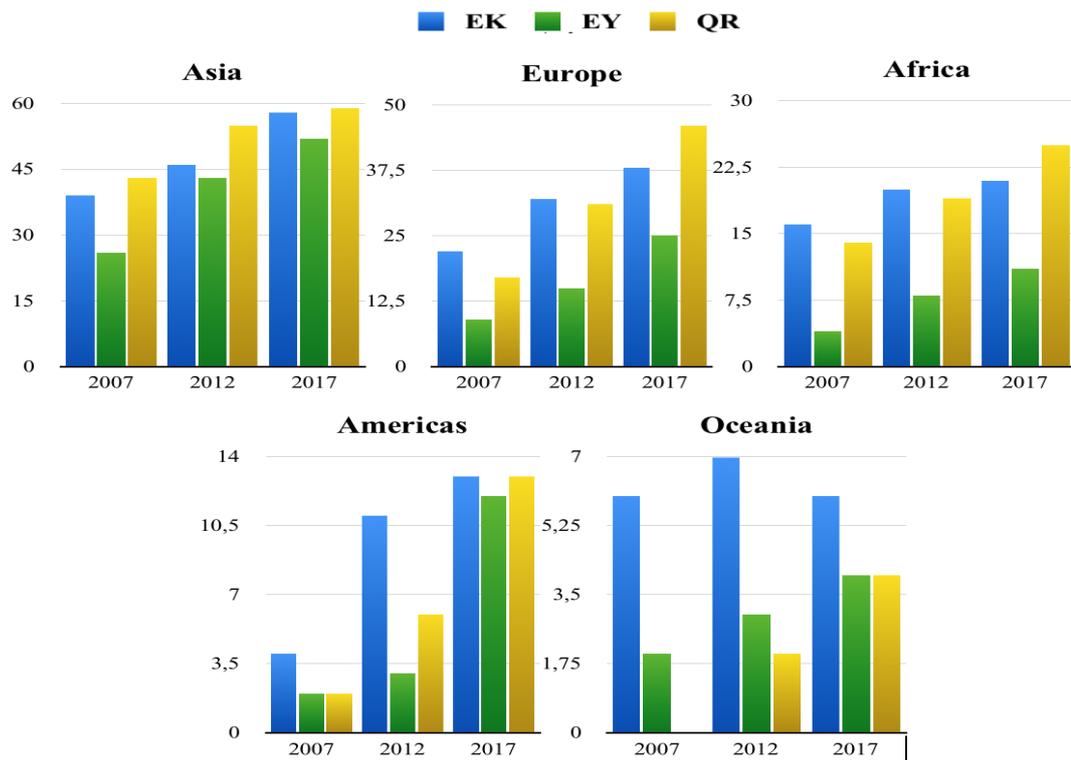


Fig. 6. Dynamics of regions destinations number in 2007, 2012, and 2017 performed by Emirates, Etihad, and Qatar carriers (Source: created by authors)

Connectivity of Middle East to Europe is the highest among other regions, that is why this market is very dense (see Fig. 7).

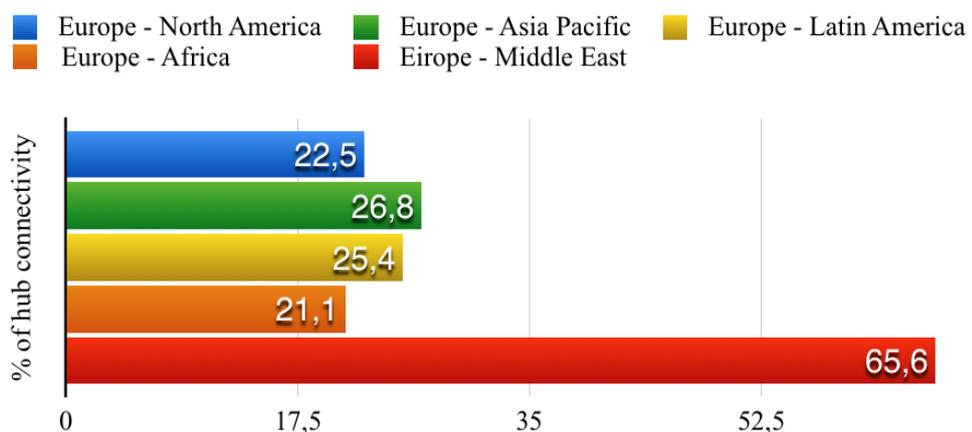


Fig. 7. European hub connectivity to world regions, % (Source: created by authors)

As for the world connectivity, the Middle East showed the best percentage of growth of direct connectivity in 2016 in comparison with 2015 (Fig. 8). While the biggest growth of airport connectivity from 2015 to 2016 showed South America (9.2 %). Loss of direct traffic was very significant in Africa (-11.1%), in a particular because of enhanced connectivity of the Middle East and South America.

The whole European market remains very significant for emerging carriers, where they still have an advantage in front of legacy carriers. While LCCs from the Middle East have already begun to compete with European LCCs flying to major hubs (LHR, AMS, FRA, CDG). European FSNCs are fighting for the customer with European LCCs and emerging carriers. Emerging carriers have only one threat in this region, in case European LCCs like Ryanair, EasyJet or Pegasus penetrate into Gulf hubs, so they can influence significantly on traffic.

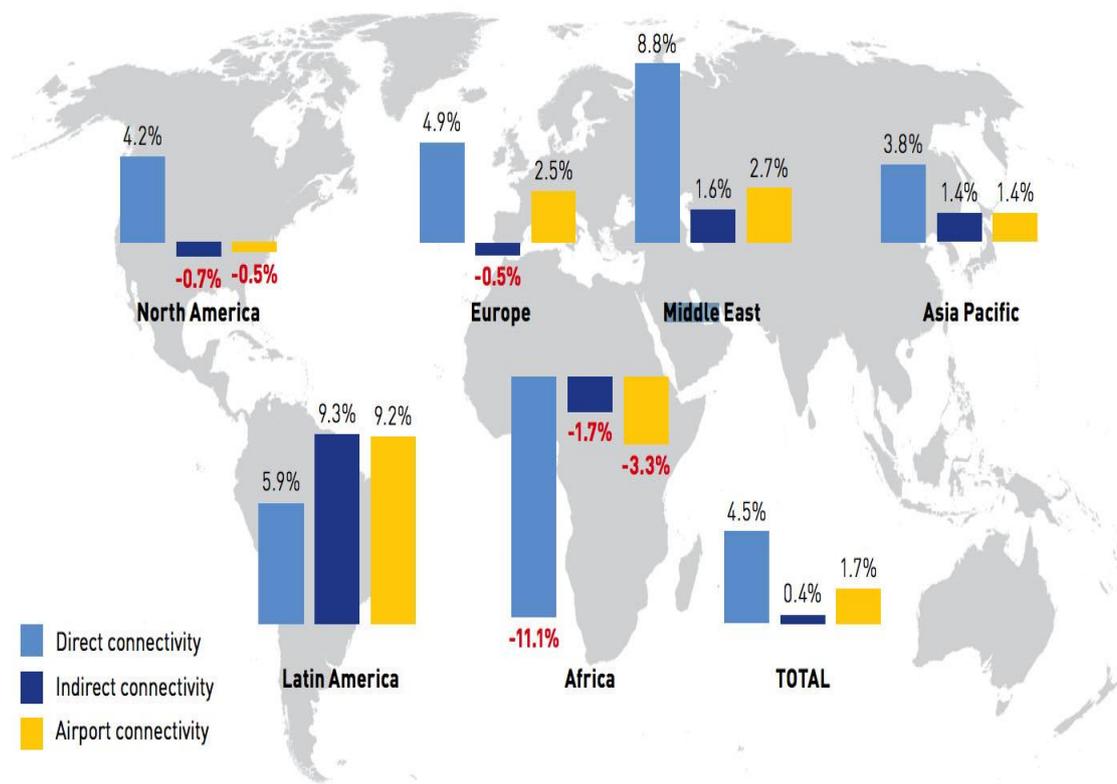


Fig. 8 World regions` connectivity, % of growth in 2016 comparing to 2015

The overall trend of destination number growth within Asia was reached by Etihad (it was called as the fastest growing airline in the industry, dated 2015). Emirates and Qatar showed more steady increment (Fig. 9).

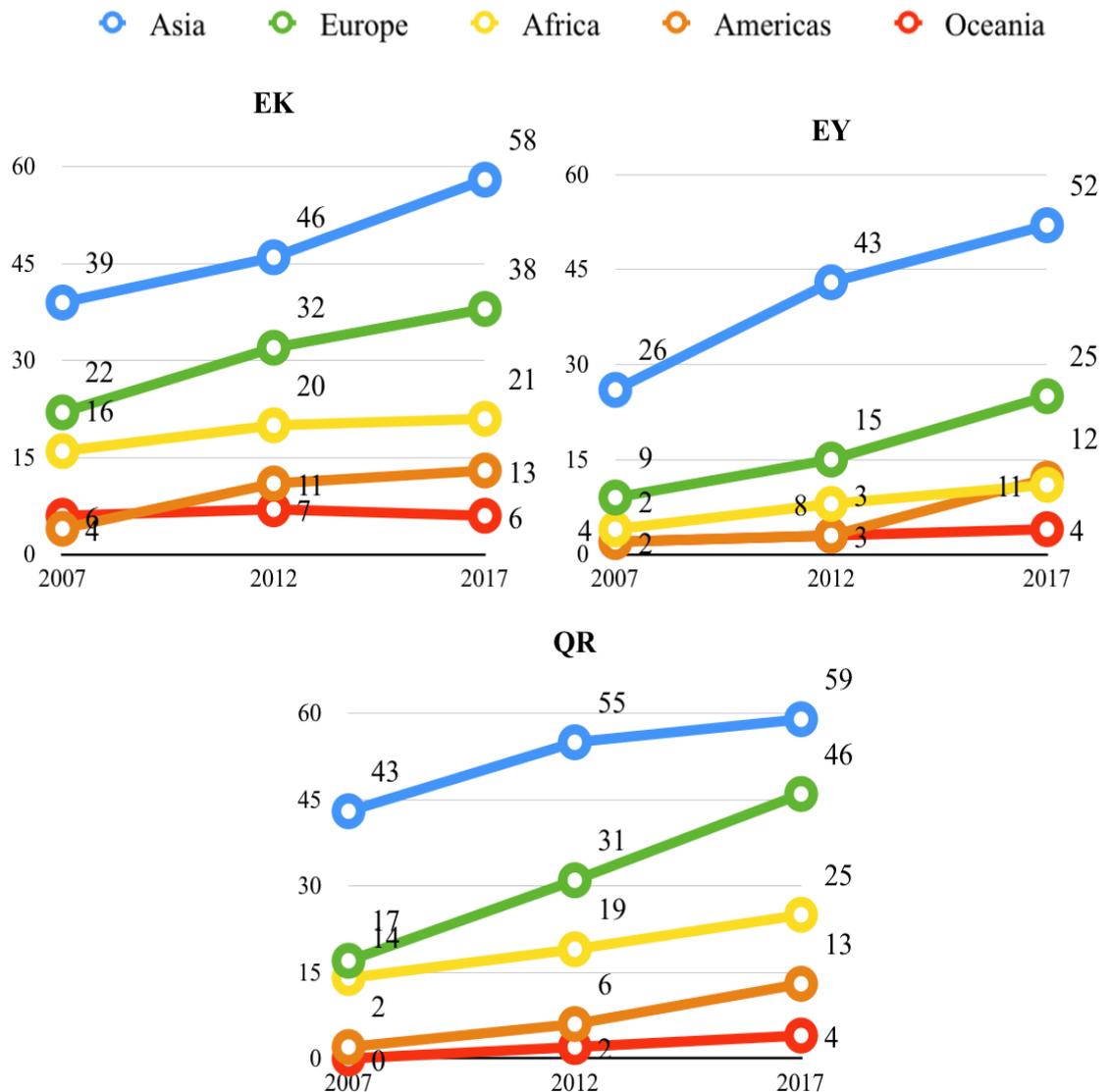


Fig. 9. Dynamics of EK, EY, and QR number distributed among regions in 2007, 2012, and 2017
 (Source: created by authors)

This diagram depicts the dynamics of each emerging carrier destinations by regions. Analyzing European region, the fastest growth is shown by Qatar (Etihad runs close to Qatar as well). Emirates

has steady destination growth in all regions. Etihad growth is really significant in Asia region, evolving from 26 destinations in 2007 to 52 in 2017.

Cargo operation is also represented well in emerging airlines structure. Airline groups try to enhance it till the airport can handle such heavy aircraft, mostly because cargo is easier to sustain and get quick assets` feedback. Though on freight share falls fewer percentage of emerging carriers` operation, it still takes place there.

To mention its significance on the world arena let`s consider the top 25 airlines in terms of cargo transportation (FTKs) in 2015 (see Fig. 10).

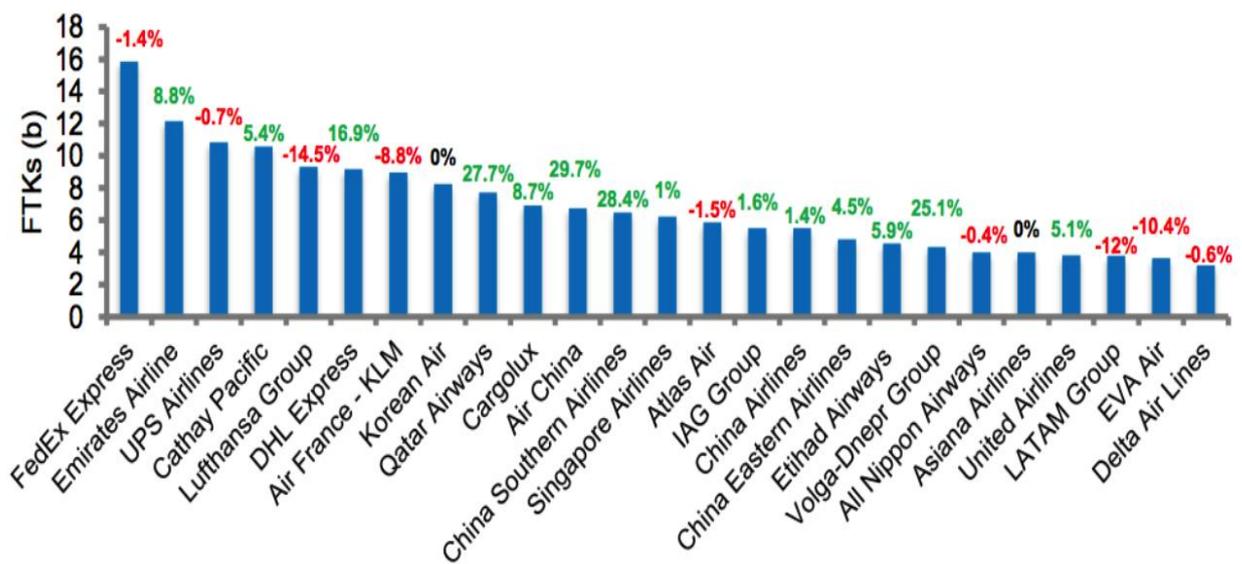


Fig. 10. FTKs (billion) airline ranking in 2015 and YoY (%) growth

Ranking kept being similar to few recent years, due to Chinese and Middle East airlines` growth. At the same time, European and Latin American carriers` cargo turnover declined a bit. FedEx Express remained dominant player here (with small decline -1,4% to previous 2014). It is followed by Emirates Airlines, which rose its cargo capacity by 9% and thus strengthened its position. The strongest growth was shown by DHL Express +17% in comparison to 2014.

Top 30 airports in terms of cargo turnover are still leading in America and Asia market. Nevertheless, Middle East airports like Dubai and Doha provide large access to the market and stay very competitive to European like Frankfurt and Paris (CDG).

Regional market expansion by three emerging giants Emirates, Etihad and Qatar Airways can be mentioned that all had quite significant and fast growth in almost every region. This expansion is highly influenced by European and American legacy carriers (as far as they cannot compete with the service-price proportion of emerging carriers). Asia region is represented by emerging carriers. China is also a desirable market, but due to the governmental restrictions and polity further expansion is temporary frozen. The U.S. is keeping the same restricted policy for Gulf carriers. European carrier Lufthansa and Canadian authorities limit the expansion of emerging airlines as a result of national carrier (Air Canada) lobbying.

Problems of expansion from business model perspective are the following:

- ✓ huge and untypical for airline industry growth of emerging carriers is slowing down; companies face the real competition with own LCCs on domestic and other LCCs on the international market; future expansion to Europe and America is temporary frozen;
- ✓ geographical limitations to far East and Australia created for Asia-Pacific airlines more chance to win competition there, though emerging carriers still possess a good share, which in future can be substituted;
- ✓ potential expansion of fast-growing European and other LCCs on Middle East Market can influence on traffic redistribution and dragging it from emerging carriers;
- ✓ congested hubs made it difficult to increase frequencies, hence emerging carriers could lose their potential ASK with a large increment of the fleet (which is supposed to be delivered from Boeing and Airbus in recent years).

Another challenge to the big three emerging carriers are competitive features. They have gotten benefits in price reduction for years, which lead to world protests chain and made them to review the equality of entrance to the Middle East market. New and legacy airlines could steal a chapter from the emerging carriers` playbook. Long haul flights using large and full aircraft are very profitable. In addition, several airlines are using the *'state-less' business model* of serving routes all over the world. Norwegian Air is the latest and biggest threat to both legacy carriers in Europe and to other large hub-to-hub airlines. The ME3 also participate in the US to Europe routes and faced increasing pressures from low-cost carriers like Norwegian, Ryanair, EasyJet, Southwest. Turkish Airlines is also

targeting the ME3 with lower cost tickets and higher flight frequencies. Its stated goal is to displace all the ME3's as the largest air carrier serving the Middle East.

The biggest impact was on the big three Gulf carriers of Emirates, Etihad and Qatar Airways who have been heavily targeting the U.S. market in recent years, opening new long-haul routes to fill what had been a big gap in their networks. Passenger numbers dropped in the wake of the laptop ban, as passengers either chose other airlines to get to the US or decided against traveling there at all.

Emirates and Etihad that have recently stated loss in their financial statement have been forced to lower the expansion. Their unprecedented growth in revenue and passengers are slowing down.

The low fuel price still remains in favor of carriers` operation costs as well as cheap labor, though this will be no more an advantage, because profits up for now, though yield, load factors and operation margins will be slowing down.

Modification of emerging carrier business model for Middle East airlines on regression analysis and application of Porter's five forces

Operation performance indicators

One of the first operation indicators that represent the size and scale of airline operation is definitely Available Seat Kilometers/Miles (ASK/ASM). Available Seat Kilometers (ASK) is a measurement of the available carriers` capacity that will further generate revenue. From the definition itself, it is how many seats can be purchased for total airline annual mileage. This indicator is calculated as

$$ASK = S * D, \quad (1)$$

where

S - number of seats;

D – total distance traveled.

ASK give airline senior management a clear indication of their capacity. Larger legacy carriers usually operate several types of aircraft with different seating configurations. It is widely used in all

types of operation activity calculations. For example, last month of 2017 emerging carriers have the following weekly capacity (see *Table 9*).

Table 9

Emerging carriers weekly seat and ASK capacity (Jan 2017)

	Weekly Seats	Weekly ASK (millions)
Emirates	819,562	3,550
Qatar Airways	563,765	1,853
Etihad Airways	267,909	1,142

Second by its significance is Revenue Passenger Kilometers (RPK) – transport field measurement of the number of kilometers traveled by paying passenger calculated as

$$RPK = P * D, \quad (2)$$

where,

P – total number of revenue passengers;

D - total distance traveled.

RPK is used to determine the break-even load factor, where the airline becomes generating revenue covering its fixed costs.

Going out from ASK and RPK, there are the following performance indicators:

Load Factor (LF) or Passenger Load Factor (PFL) – is the measurement showing the percentage of actually utilized seats during the flight or in other words, traveled number of seats divided by aircraft total number of seats.

$$PFL = RPK / ASK, \quad (3)$$

where,

RPK - - revenue passenger kilometers;

ASK - available seat kilometers.

Cost per available seat (CASK) – is a commonly used measurement of the airline unit cost. A lower indicator shows airline ability to make revenue easier, because of charging fewer costs to cross its break-even margin. CASK is defined as a ratio

$$\text{CASK} = C_{\text{tot.op.}} / \text{ASK}, \quad (4)$$

where,

$C_{\text{tot.op.}}$ - total operating costs.

The last of five main operation calculations, but not the least is Yield. Yield of airline defines the average fare per passenger and computed as

$$Y = R_{\text{pass}} / \text{RPK}, \quad (5)$$

where,

R_{pass} – is total passenger revenue.

Yield is not relevant to calculate within industry or region and use it as a comparison indicator because it varies from airline to airline and is barely consistent (length difference and load factor are not incorporated). Though, it is useful to compare this performance indicator over time (better on the itinerary basis).

Costs and profitability ratios calculation

Despite operation performance, profitability calculations and ratios are required.

Operating Profit ($P_{\text{oper.}}$) – is the base profit equation. Unit cost will not tell anything about profitability because it does not cover unoccupied seats, as well as total revenue does not show the output, because it does not show expenditures (direct operating costs, venture investments, etc.). On contrary, Operating Profit shows revenue generated with total expenditure subtraction.

$$P_{\text{oper.}} = \text{RPK} * \text{Yield} - \text{ASK} * \text{Unit cost}, \quad (6)$$

Coming up with the idea that operating profit shows the best competitive advantage within the industry, a company can build a strategy on operation cost reduction or revenue increase. This strategy of profit-maximization is well-known among airlines. Despite, a company can choose its own targeted function to optimize, it could be direct operation costs reduction, or change of revenue management object function (increasing/decreasing fares according to reviewed seat allocation strategy), itinerary network modification or fleet structure optimization.

Choosing the strategy within a formed business model is the task of each airline management team. A principal of searching for the objective function is a primary task of every optimization problem, whether it is to be minimized (like direct operation costs, turnaround time, queue waiting time) or maximized (like profit, passenger traffic, operating profit, etc.).

Considering the following problems rose in theoretical and analytical parts of this article (business model gaps, slowing of growth rate, markets blockages, frequencies and competitive advantage lose), the following solutions should be proposed:

1. Determine main emerging carriers` operation drivers.
2. Find out possible variables for each operation driver.
3. Compose a correlation-regression analysis array of data.
4. Analyze the results of the multi-regression analysis, create the final output data.
5. Compose Porter`s five forces model for emerging carriers, find each force score.
6. Propose a flexible business strategy within existing `emerging carrier` model.

Due to one of distinctive features of the emerging carrier model, namely the annual 10% increment rate for over last decade of operation, there are four main fast-growing indicators: Passengers, ASK, RPK, and Fleet (each of these indicators sustained growth even under economic crisis period in 2007-08). But the problem raised in the analytical part is a high concern about further growth slowing down. A company that has been growing annually by 10% cannot sustain it forever (according to the classical principal of economic cycle), so at least it should maintain the growth rate on the average industry growth level, not to stay `behind the curtains`.

To understand the derivative for their growth a certain mathematical approach is needed. So far, the number of influencing factors can be quite large, the best way to estimate their relationship behavior is throughout making a multiple regression analysis.

In order to understand how emerging carriers should maintain their profitability under a balance or decline phase, influencing factors should be defined for those four fast-growing indicators (further objective function).

This method is used for the construction of regression models and is one of the essential empirical research methods. Western scientific schools have made a significant contribution to the analysis and evaluation of economic phenomena by emphasizing the positivist approach.

This approach involves observing phenomena and processes that occur in the economy, the analysis of these phenomena with the help of econometric models and identifying of the nature, tightness and degree of influence.

The focal point of the design part, four main fast-growing factors were chosen to be explored. Research in analytical part stumbled with the array of factors that can influence passenger number, ASK and RPK, fleet structure directly or indirectly. This hypothesis was justified by the assumptions.

The initial data was collected for three emerging carriers over the period of last decade (2007-2016) and represented in Appendix A, B and C.

For making regression analysis *IBM SPSS Statistics* tool was used. The choice of using this certain package of mathematical statistics was used because of advanced machine learning algorithms, open source extensibility, integration with big data and improved risk minimization.

Before doing the analysis, large statistical data was put and calculated (for specific indexes of profitability of operation productivity). During the calculations, statistical method was exploited. Correlation and regression model is represented by the model-based variables, summary table, ANOVA^b and coefficients.

The following results were received during the multiple regression analysis (see *Tables 10 – 13*).

Passengers` based model

It is the first driver of any airline. So far, it will influence every single variable (ASK, RPK, or Fleet). Hence, variables are chosen primarily to define the regression tightness between a number of passengers and other variables (all initial data is available in Appendix A, B and C). From *Table 10* can be tracked which variables were applied for the analysis.

Table 10

Passengers` based model variables ^a

Model	Variables Entered	Variables Removed	Method
1	PLF (%), In-flight costs, GDP per capita, Number of Departures (number), Fuel and oil, Fleet, Salaries and expenses, Operating revenue, Direct operating costs (DOC) ^a	.	Enter

^a dependent variable: number of passengers

From the second output *Table 11* the summary results are shown, where R – is a multiple correlation ratio showing the tightness of the relationship:

Table 11

Passengers` based model summary

Model	R	R ²	Adjusted R ²	Std. Dev.	Durbin-Watson
1	0,998*	0,997	0,996	0,85319616	2,232

0,00 < R < 0,499 – weak correlation,

0,500 < R < 0,799 – relatively tight correlation,

0,800 < R < 1 – strongly tight correlation.

In the Passengers` based model R is very tight and significant, which means the close relationship of chosen influencing factors of market size.

R² – is regression coefficient, which determines the percentage dependence of number of passengers on entered independent variables.

R_{adj}^2 (Adjusted R-Square):

$$R_{adj}^2 = \left[\frac{(1-R^2)(n-1)}{n-k-1} \right], \quad (7)$$

where,

n - is the number of points in data sample,

k - is the number of independent variables in the model, excluding the constant.

Durbin-Watson – is an indicator of autocorrelation in the residuals from the regression analysis. The value should be close to 2 (1,8-2,2 – means autocorrelation is absent).

ANOVA^b – is the analysis of collected data variance within the statistical model.

Analyzing the ANOVA^b *Table 12* the key factor to search for is Sig. (Significance). In case it is lower than 0,05 the model is considered as consistent and null hypothesis is not rejected.

Sums of Squares – is an amount of variability (sum of the squared differences between each observation and the overall mean), which has its corresponding degrees of freedom (df) associated with it. Total df is one less than the number of regression observations.

Mean Square – is Sum of Squares divided by df.

Table 12

Model	Sum of Squares	df	Mean square	F	Sig.
Regression	4,770E15	9	5,300E14	728,135	,000 ^a
Residual	1,456E13	20	7,279E11		
Total	4,785E15	29			

The F – is Fisher ratio used to decide if Sample Means are for the sampling variability (test of null hypothesis H₀). F – is Mean Square divided by Error Mean Square (in this case it equals 137,4, though it is not included to the summary). F should be bigger than 0,05 to consider a model as adequate one.

The next *Table 13* of correlation-regression analysis shows exactly the influencing factors of the model, Unstandardized and Standardized Coefficients, Student’s t-distribution (t), and Sig. (Significance).

Taking a look at received results, the following conclusion is made. In this coefficients summary very important is the last graph of this table Sig., as far it determines the importance of chosen factor for the dependent variable. If Sig.>0,05, this factor is considered as significant.

The consistency of the model is determined by Student’s t-distribution (t), which should be more than |2| (module). As for Standardized Coefficients, it is elasticity coefficient (to what extent the

dependent variable will change if independent variable will change to 1%). Negative values show reverse dependencies, while positive one – direct.

Table 13

Coefficients^a

Factor	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	44011,341	6550186,474		-,007	,995
Fleet	80347,337	13345,456	,349	6,021	,000
GDP per capita	64,507	19,844	,072	3,251	,004
Departures (number)	42,316	8,154	,152	5,190	,000
In-flight costs	,007	,003	,188	2,717	,013
Fuel and oil	-,001	,000	-,184	-6,128	,000
Salaries	-,002	,001	-,136	-2,203	,039
DOC (direct operating costs)	,002	,000	,837	6,375	,000
Operating revenue	,000	,000	-,164	-1,284	,214
PLF (%)	-74476,295	87451,616	-,015	-,852	,405

According to the Sig. last two factors (Operating revenue and PLF %) are considered as insignificant, hence they can be pushed away.

Student's t-distribution for 7 of 9 factors is bigger than |2|, hence this model can be assumed as a good one.

To be more precise Passenger number is influenced by such factors as fleet size, number of departures of observed airlines and average GDP per capita of countries were observed airlines operate. They have a direct dependency, which means with their increment, a number of passengers will also increase. Despite, in-flight costs, fuel and oil costs have a reverse dependency, which means that a number of passengers will increase with their decline.

With analogy to Passengers` based model, the review of ASK, RPK and Fleet is done (see Tables 14 - 25)

ASK based model

Table 14

ASK based model variables

Model	Variables Entered	Variables Removed	Method
1	Number of Departures (number), Breakeven load factor (%), In-flight costs, PLF (%), Destinations, Passenger Revenue, Fleet, Number of passengers, RPK (revenue pass km)	.	Enter

α dependent variable: available seat kilometers

Table 15

ASK based model summary

Model	R	R ²	Adjusted R ²	Std. Dev.	Durbin-Watson
1	1,000*	0,999	0,999	3,026E9	1,891

ASK based model is very competent, as far it has a perfect match of R, R² and R_{adj}^2 , it justifies a strong and significant relationship and high dependence of available seat kilometers on entered independent variables (for details by each factor see Table 17).

Table 16

ANOVA^b

Model	Sum of Squares	df	Mean square	F	Sig.
Regression	1,963E23	9	2,181E22	2380,97	,000 ^a
Residual	1,832E20	20	9,160E18		
Total	1,965E23	29			

Sig. is lower 0,05, hence the model is assumed as consistent.

From Table 17, ASK based regression model showed only 4 of 9 influencing factors with high Sig. They are number of passengers, RPK, in-flight costs and number of departures.

Table 17

Coefficients^a

Factor	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	8,030E10	2,610E10		3,077	,006
Number of passengers	1248,934	415,320	,195	3,007	,007
RPK (revenue pass km)	,910	,099	,726	9,195	,000
In-flight costs	15,147	6,925	,060	2,187	,041
Departures (number)	108549,744	32998,923	,061	3,289	,004
Fleet	-2,844E7	9,087E7	-,019	-,313	,758
Passenger Revenue	-,117	,111	-,031	-1,054	,304
PLF, (%)	-5,030E8	3,424E8	-,016	-1,469	,157
Break-even load factor, (%)	-8,261E8	4,631E8	-,018	-1,784	,090
Destinations	9,816E7	6,263E7	,039	1,567	,133

Other factors were not taken into consideration, because of Student's incoherence. Also, all factors have direct dependency with dependent variable (ASK).

RPK based model

RPK model was chosen, because it encompasses a lot of cost influencing factors (see Table 18).

Table 18

RPK based model variables

Model	Variables Entered	Variables Removed	Method
1	In-flight costs, Breakeven load factor, %, GDP per capita, Operating Profit/Loss before taxation, Number of Departures (number), Destinations, Fleet, Operating revenue, Number of passengers, Direct operating costs (DOC) ^a	.	Enter

^a dependent variable: revenue passenger kilometers

Though the rest dependent variables can be related to some of them they itself do not represent a cost value. That is why RPK analysis is important to see in relation to in-flight costs, operating profit/loss (those before taxation), operating revenue (as the grand total stated whether it will cover the fixed costs), and direct operating costs (DOC).

Table 19

RPK based model summary

Model	R	R ²	Adjusted R ²	Std. Dev.	Durbin-Watson
1	0,998*	0,996	0,994	5,175E9	2,052

RPK based model shows high R, R² and R_{adj}^2 , which justifies the null hypothesis about influencing factors, and their strong relationship with revenue passenger kilometers and its high dependence on these factors ceteris paribus (for detailed description by each factor see Table 21).

Table 20

ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1,246E23	10	1,246E22	465,238	,000 ^a
Residual	5,088E20	19	2,678E19		
Total	1,251E23	29			

Sig. is lower 0,05, hence the model is assumed as consistent.

RPK based regression model showed only 4 of 10 influencing factors with high Sig. (as can be seen from Table 21). They are number of passengers, fleet, GDP and operating revenue.

Like many other factors RPK is highly dependent on the number of passengers and fleet, which naturally derives from its basic equation.

Other factors were not taken into consideration, because of Student`s low value, those are break-even load factor, destination number as well as departures, direct operating costs, operating profit/loss (before taxation) and the last one in-flight costs.

Also, all factors have direct dependency with dependent variable (RPK).

Table 21

Coefficients ^a

Factor	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1,105E11	5,619E10		1,967	,064
Number of passengers	2822,491	897,154	,552	3,146	,005
Operating revenue	3,580	1,616	,372	2,214	,039
GDP per capita	-671781,958	182290,294	,147	3,685	,002
Fleet	9,153E8	1,291E8	,778	7,090	,000
Breakeven load factor, %	-1,635E9	8,539E8	-,045	-1,915	,071
Destinations	-1,978E8	1,560E8	-,099	-1,268	,220
Departures (number)	-173446,235	86312,652	-,122	-2,010	,059
DOC (direct operating costs)	-3,593	2,331	-,337	-1,541	,140
Operating Profit/Loss, before taxation	-3,272	2,976	-,040	-1,100	,285
In-flight costs	-33,085	33,912	-,165	-,976	,342

Fleet based model

Table 22

Fleet based model variables

Model	Variables Entered	Variables Removed	Method
1	Gross profit/loss, Maintenance & overhaul, GDP per capita, Destinations, In-flight costs, Fuel and oil, Salaries and expenses, Number of passengers, Operating revenue, (DOC) ^a	.	Enter

^a dependent variable: fleet

For the Fleet based model there are many costs as well in RPK model. They are included not only because of the high capital investments (thought it plays inevitable role). They encompass the speed

of fleet renovation and decreasing of the average fleet age, which by the way stays in 6-10 years (significantly less than the industry average age).

Table 23

Fleet based model summary

Model	R	R ²	Adjusted R ²	Std. Dev.	Durbin-Watson
1	0,997*	0,994	0,991	5,198	2,206

Fleet based model shows high R, R² and R_{adj}^2 , which justifies the null hypothesis about influencing factors, and their strong relationship with the dependent variable (for detailed description by each factor see Table 25).

Table 24

ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	89862,003	10	8986,200	332,552	,000 ^a
Residual	513,463	19	27,024		
Total	90375,467	29			

Sig. is lower 0,05, hence the model is assumed as consistent.

Table 25

Coefficients^a

Factor	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-37,052	8,321		-4,453	,000
Destinations	,558	,091	,327	6,098	,000
Passengers	4,065E-6	,000	,935	4,225	,000
GDP per capita	,001	,000	,180	5,061	,000
Fuel and oil	1,162E-8	,000	,469	3,928	,001
M & O (maintenance and operations)	2,517E-8	,000	,102	2,708	,014
Gross profit/loss	1,141E-8	,000	,091	2,936	,008
In-flight costs	6,827E-8	,000	,400	3,317	,004

Factor	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Operating revenue	-6,002E-9	,000	-,733	-3,510	,002
DOC (direct operating costs)	-4,208E-9	,000	-,461	-1,205	,243
Salaries	4,894E-9	,000	,084	1,082	,293

Fleet based regression model showed 8 of 10 influencing factors with high Sig. They are a number of passengers, destinations, GDP per capita of countries where observed airlines operate, fuel and oil, maintenance and overhaul, gross profit/loss, in-flight costs and operating revenue.

The rest two factors were not taken into consideration, because of Student`s low value. All factors have direct dependency with the dependent variable (fleet) except operating revenue.

Application of Porter’s five forces into emerging carrier business model of Middle East airlines according to obtained empirical results

Porter’s model was based on the Structure-Conduct-Performance principal (first of all in sectoral organizational economics). Hence it was tested on a diverse problem solving (from making businesses generate more profit by focusing on core competencies to government policy formation for sector regulations).

Other Porter frameworks include the added value and the other strategies in industry. For the airline operation this model can be essential in determining of weakness.

Factors that influence on four main operation objectives for each airline are indirectly connected to the business model. The same is in relation to business strategy that deviates from airline business model.

There were observed 4 main operational elements all airlines strive to maintain, as far as they are derivatives for other operation and financial indicators. There were Number of Passengers, ASK, RPK and Fleet.

In order to compile a detailed Business Model canvas, the detailed Porter`s model with five force drivers should be completed (see *Table 26*). To refresh the theoretical implication of the Porter`s model, it includes the threat of new entrants, subsidies, bargain power of suppliers, bargain power of

buyers and industry rivalry. This model is highly connected with the external environment, though it embraces the internal factors. Those Influence factors (5 forces) are ranked from 1 to 5: 1 – Low, 2 – Relatively Low, 3 – Moderate, 4 – Critically Moderate, 5 – High.

Table 26

Detailed Porter`s five forces model with influence factor on Emerging carrier business model for Middle East airlines

Force	Detailed implications	Influence on Business model
1	2	3
Threat of new entrants	<ul style="list-style-type: none"> Entry barriers (patents, right). Market with sophisticated barriers makes it hard to welcome new entrants. Attractive open market is highly occupied. 	High (5)
	<ul style="list-style-type: none"> Government policy, protectionism and national carrier defend (indirect influence) 	Critically Moderate (4)
	<ul style="list-style-type: none"> Capital and operation requirements (in 90s US imposed capital requirements of \$75 billion and ROI 13-15%) 	Low (1)
	<ul style="list-style-type: none"> Brand equity (a phrase which describes the value of having a well-known brand name) 	Moderate (3)
	<ul style="list-style-type: none"> Product differentiation (distinguished product/service) 	Moderate (3)
	<ul style="list-style-type: none"> Customer loyalty to established brands 	Moderate (3)
	<ul style="list-style-type: none"> Industry profitability in general (the annual industry growth will boost the appearance of young airlines) 	Moderate (3)
Grand total Score (22)		
Threat of substitutes	<ul style="list-style-type: none"> Buyer propensity to substitute (customers loyalty to your product or service, on which extent buyers are willing to consider only one supplier) 	Moderate (3)
	<ul style="list-style-type: none"> Buyer switching costs (the cost that switches buyer from one seller to another. The greater is switching costs the lower the threat of substitutes (bigger stick with a single supplier) 	Critically Moderate (4)

	<ul style="list-style-type: none"> Relative price performance (the price of substitutes for output compared to the charging price. If the price of substitutes is lower, the competitive threat increases as the price differential increases) 	High (5)
	<ul style="list-style-type: none"> Ease of substitution (number of substitute products available in the market) 	Moderate (3)
	<ul style="list-style-type: none"> Ease of substitution (number of substitute products available in the market) 	Moderate (3)
	<ul style="list-style-type: none"> Availability of close substitute (lack of close substitute products makes an industry less competitive and increases profit potential for the firms in the industry) 	Moderate (3)
Grand total Score (18)		
Bargaining power of suppliers	<ul style="list-style-type: none"> Degree of differentiation of inputs (different suppliers provide different input characteristics, the greater this degree is the bigger power suppliers have) 	Relatively Low (2)
	<ul style="list-style-type: none"> Presence [and availability] of substitute inputs (the extent to which it is possible to switch to another supplier for an input) 	Relatively Low (2)
	<ul style="list-style-type: none"> Supplier concentration (degree of competition among suppliers) 	Moderate (3)
	<ul style="list-style-type: none"> Cost relative to total purchases (the amount airline spends on inputs from a particular supplier) 	Moderate (3)
	<ul style="list-style-type: none"> Strength of distribution channel 	Moderate (3)
Grand total Score (13)		
Bargaining power of buyers	<ul style="list-style-type: none"> Buyer concentration versus firm concentration (the extent of concentration in the buyer's industry compared to the extent of concentration in airline industry). The bigger is buyer's industry relevant for airline industry the greater is the bargaining power of buyers. 	High (5)
	<ul style="list-style-type: none"> Buyer volume (number of units of airline product available (allowable) for buyer) The greater number of buyers in comparison to the quantity purchased from airline, the greater is bargaining power of buyers. 	Critically Moderate (4)
	<ul style="list-style-type: none"> Price of airline product (the fraction of total expenditure buyers spends on airline products). The greater the fractions of total expenditure the greater the price elasticity of demand and the more 	Moderate (3)

	bargaining power buyers have.	
	<ul style="list-style-type: none"> • Buyer information (information buyers have about the airline industry and particular airline). The more information buyers have about the industry the more bargaining power buyers have. 	Moderate (3)
	<ul style="list-style-type: none"> • Product differences (the degree of differentiation between emerging carrier product and other products in the airline industry). The greater the differentiation of your product, the lower its price elasticity of demand and the less bargaining power buyers have. 	Critically Moderate (4)
Grand total Score (22)		
Industry rivalry (industry competitors).	<ul style="list-style-type: none"> • Industry growth (the speed at which the market is growing). Rapidly growing markets provide less incentive for firms to aggressively compete with each other. 	Critically Moderate (4)
	<ul style="list-style-type: none"> • Intermittent overcapacity (the amount demand over the FY or rarely over a business cycle). A more intense rivalry is likely to be fostered in airline industry on regions with high-frequency capacity. 	High (5)
	<ul style="list-style-type: none"> • Concentration and balance is the number of airlines and their relative size. 	Critically Moderate (4)
	<ul style="list-style-type: none"> • Sustainable competitive advantage through innovations 	Critically Moderate (4)
	<ul style="list-style-type: none"> • Powerful competitive strategy (complex strategy, different scenario variants, push `pillow` from crisis damage and competitive flexibility) 	High (5)
Grand total Score (22)		

In case of airline industry this model is highly efficient in strategy building. It encompasses strong and weak sides of airlines making it vivid for the airline. This model was created in reaction to the popular SWOT analysis, which Michael Porter (2008) found out not rigorous and ad hoc.

Influence factors include strategic internal aspects, such as the influence of national culture, integration in alliance joint venture, low-cost factors; and environmental external aspects, such as: state influence, and liberalization of markets.

After main growth drivers (passengers, ASK, RPK, fleet) and possible weaknesses (Porter`s model) were found, we defined the following strategy of improvement measures for ME airlines (see Fig. 11).

Measures for Middle East airlines' strategy improvement

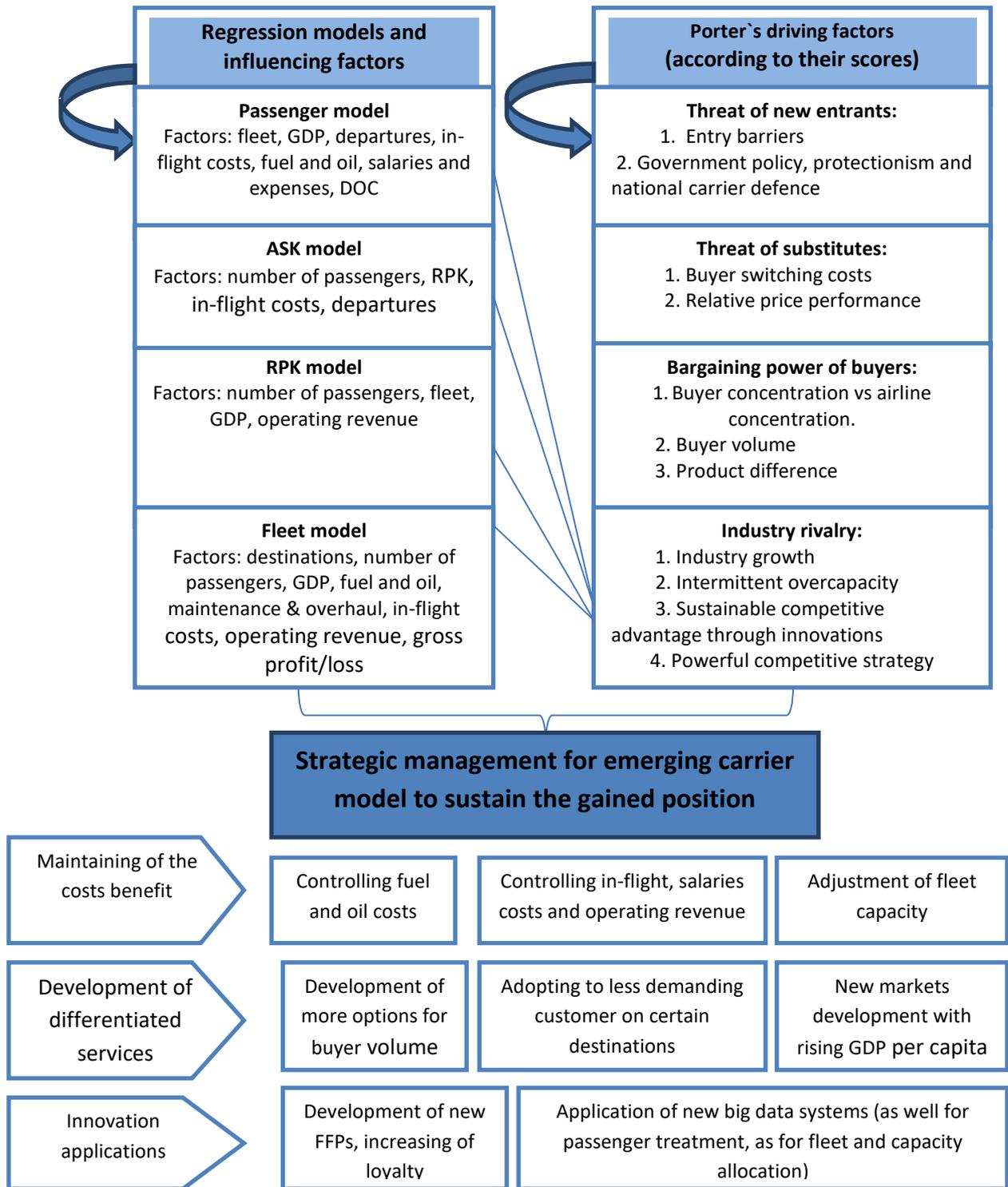


Fig. 11. Emerging carrier strategic management plan to sustain the gained development (based on results of assessed regression models and Porter's five forces model)

Implication of emerging career business model modification

On the basis of Porter's model and regression analysis can be seen, those two models are good in combination, one helps to determine the extent to which few factors can be dependent on each other fluctuation, while second – gives an overall company vision for strategy development.

According to the results, Middle East Airlines carriers can plan targets for the next 1-2 years, highlight more factors that are visible to be improved and keep a sustainable development without significant loss.

References

Afuah, A., Tucci, C. L. (2000). *Internet Business Models and Strategies: Text and Cases*. Irwin/McGraw-Hill: New York, NY.

Afuah, A. (2004). *Business models: a strategic management approach* / Allan Afuah, 1st ed., New York : McGraw-Hill/Irwin, 415 p.

Airbus Orders and Deliveries, Retrieved December 2017. Access mode: <https://goo.gl/mBWPGp>

"Air Transport in the 21st Century: Key Strategic Developments". O'Connell, John F; George Williams, Publisher: Farnham, Surrey, England; Burlington, VT: Ashgate (2011), 407 p..

2016: Air Transport Yearly Monitor (Preliminary) World Results and Analyses for the Full Year 2016.

Air transport statistics. - since November 2017. - Access mode: http://ec.europa.eu/eurostat/statistics-explained/index.php/Air_transport_statistics.

Aldamari, F., S. Fagan (2005). Impact of the Adherence to the Original Low-Cost Model on the Profitability of the Low-Cost Airline. *Transport Reviews*, Vol. 25, pp. 377-392.

Al-Sayeh Karim (2014). *The Rise of the Emerging Middle East Carriers: Outlook and Implications for the Global Airline Industry*, Master of Science in Transportation at the Massachusetts Institute of Technology, 167 p. – Available at:

<https://dspace.mit.edu/bitstream/handle/1721.1/89852/890140089-MIT.pdf?sequence=2>

Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic Management Journal*, 22, pp. 493-520.

ANALYSIS: Airlines in the Middle East - The Biggest and Fastest Growing Operators - Domestic market. – Access mode: <https://goo.gl/9xRGLE>

Annual Analyses related to the EU Air Transport Market 2016 Final Report, March 2017, European Commission. - Access mode: <https://goo.gl/iQe4DU>

Belobaba, Peter, Omani, Amedeo and Barnhart, Cynthia (2015). The global airline industry, John Wiley & Sons, Ltd, 2015, 494 p. – Access mode: <https://onlinelibrary.wiley.com/doi/book/10.1002/9780470744734>

Bieger, Thomas; Agosti, Sandro (2005). Business Models in the Airline Sector Evolution and Perspectives. In: Delfmann, Werner et al (2005) Strategic Management in the Aviation Industry. Ashgate Publishin Limited: Hampshire.

Boeing Orders and Deliveries, Retrieved December 2017. Access mode: <http://www.boeing.com/commercial/>

Brousseau, E., & Penard, T. (2007). The Economics of Digital Business Models: A Framework for Analyzing the Economics of Platforms. *Review of Network Economics*, 6(2), 81–114.

Cento, Alessandro (2008). The Airline Industry: Challenges in the 21st Century. Published by Springer, 2009, 184 p.

Centre for Aviation (CAPA), "Gulf Carriers and Turkish Airlines ready to expand in China, if only air rights were available". – since Nov 3, 2013. Access mode: <https://centreforaviation.com/insights/analysis/gulf-carriers-and-turkish-airlines-ready-to-expand-in-china-if-only-air-rights-were-available-136090>

Chellappa Ramnath K., Raymond G. Sin (2012). Airline Classification (September 18, 2012). Available at: <https://ssrn.com/abstract=2148381>

Chellappa Ramnath K., Raymond G. Sin , S. Siddarth (2011). Price Formats as a Source of Price Dispersion: A Study of Online and Offline Prices in the Domestic U.S. Airline Markets. *Information Systems Research*, Vol. 22, No. 1, March 2011, pp. 83–98. Available at: https://www.researchgate.net/publication/220079892_Price-Formats_as_a_Source_of_Price_Dispersion_A_Study_of_Online_and_Offline_Prices_in_the_Domestic_US_Airline_Markets

Chesbrough, H. and Rosenbloom, R.S. (2002). The Role of the Business Model in Capturing Value from Innovation: Evidence from Xerox Corporation's Technology Spin-Off Companies. *Industrial and Corporate Change*, 11, pp. 529-555.

Chesbrough, H. W. (2006). Open Business Models: How to Thrive in the New Innovation Landscape. Boston, MA: Harvard Business School Press., 224 p.

Christensen, C. M. (2001). The past and future of competitive advantage. *MIT Sloan Management Review*, 42 (2), pp. 105-109.

Current Market Outlook, 2016–2035. – Access mode: http://www.boeing.com/resources/boeingdotcom/commercial/about-our-market/assets/downloads/cmo_print_2016_final_updated.pdf

Dobruszkes, F. (2013). The geography of European low-cost airline networks: a contemporary analysis. *Journal of Transport Geography*, 28, 4, p. 75-88.

Don, Scott -Kemmis (2012). Business Model Innovation. Responding to change and pursuing growth: exploring the potential of business model innovation in Australia. Australian Business Foundation, 75 p.

Dunn,G., Govindasamy, S., Ranson, L. (2009). Asia leading low cost growth. *Airline Business*, May2010, Vol. 26 Issue 5, pp. 56-56.

Eller, Rogéria de A. G., M. Michelle (2014). The main cost-related factors in airlines management. *Journal of Transport Literature*, Jan. 2014, Vol. 8, n. 1, pp. 8-23.

Emirates Airlines. Consolidated financial statements and other reports, till 2016. – Access mode: <https://www.emirates.com/english/about/annual-reports.aspx>

Etiihad Airways. Consolidated financial statements and other reports, till 2015. – Access mode: <https://goo.gl/CXk4GX>

Fielt, Erwin (2011). Understanding business models. *Business Service Management white paper*, volume 3. Brisbane, Australia: Smart Services CRC, 50 p. https://eprints.qut.edu.au/41609/1/Business_Service_Management_Volume_3_Mar2011_Understanding_Business_Models_Final.pdf

Franke, M. (2007). Innovation: The winning formula to regain profitability in aviation? *Journal of Air Transport Management*, Vol 13, pp. 23-30.

Franke, M. & John, F. (2011). What comes next after recession? - Airline industry scenarios and potential end games. *Journal of Air Transport Management*, 17(1), pp.19–26. Available at: <http://dx.doi.org/10.1016/j.jairtraman.2010.10.005>.

Hvass, K.A. (2008). A Boolean Analysis Predicting Industry Change: Innovation, Imitation, & Business Models, PhD Thesis, Copenhagen Business School, Denmark

Ghaziani, A. and Ventresca, M.J. (2005). Keywords and Cultural Change: Frame Analysis of Business Model Public Talk 1975-2000. *Sociological Forum*, 20 (4), pp. 523-559

Giesen E, Berman S, Bell R, Blitz A (2007). Three ways to successfully innovate your business model. *Strategy and Leadership*, 35(6), pp. 27–33.

Gillen David and Ashish Lall (2004) .Competitive advantage of low-cost carriers: some implications for airports. *Journal of Air Transport Management*, vol. 10, issue 1, pp. 41-50.

Graham Francis, Dennis Nigel, Stephen Ison, Ian Humphreys (2007). The transferability of the low-cost model to long-haul airline operations. *Tourism Management*, Volume 28, Issue 2, April 2007, pp. 391-398.

Hunter L. (2006). Low Cost Airlines: Business Model and Employment Relations. *European Management Journal*, Vol. 24, No. 5, pp. 315–321.

Lawton, T. C. and S. Solomko (2005). When being the lowest cost is not enough: Building a successful low-fare airline business model in Asia. *Journal of Air Transport Management*, 11 (6), pp. 355-362.

Lehrer, Richard; Schauble, Leona (2006). The Cambridge Handbook of Learning Sciences. Cambridge, UK: Cambridge University Press, 371 p.

Lordan, O., Sallan, J., and Simo, P. (2014). Study of the topology and robustness of airline route networks from the complex network approach: a survey and research agenda. *Journal of Transport Geography*, Vol.37, pp.112-120.

Magretta, J. (2002). Why Business Models Matter. *Harvard Business Review*, 80, pp. 86-92.

Mauricio E. Moreira (2014). An analytical model for the assessment of airline expansion strategies. *Journal of Airline and Airport Management*, 4(1), pp. 48-77.

Morris Michael, Minet Schindehutte and Jeffrey Allen (2005). The entrepreneur's business model: toward a unified perspective. *Journal of Business Research*, vol. 58, issue 6, pp. 726-735.

Nair Sujith, Miguel Palacios, José Javier Tafur Segura (2011). Flexibility in airline business models with core competence as an indicator. Available at: [http://oa.upm.es/12480/2/INVE MEM 2011 105228.pdf](http://oa.upm.es/12480/2/INVE_MEM_2011_105228.pdf)

O'Connell, John F. (2011). The Rise of the Arabian Gulf Carriers: An insight into the business model of Emirates Airline. *Journal of Air Transport Management*, Vol. 17, 6, p. 339-346.

O'Connell, J. and Williams, G. (2007). The Strategic Response of Full Service Airlines to the Low-Cost Carrier Threat and the Perception of Passengers to Each Type of Carrier. PhD Thesis, School of Engineering, Cranfield University, Cranfield.

Osterwalder, A. (2004). The Business Model Ontology—A Proposition in Design Science Approach. PhD Thesis, University of Lausanne, Switzerland., p. 16.

Osterwalder, A., Pigneur, Y., & Tucci, C. (2005). Clarifying business models: Origins, present and future of the concept. *Communications of AIS*, Vol.16 (1), p. 1–40.

Oxford English Dictionary, OED [Electronic resource]. – 2018: Oxford University Press. - Access mode: <https://en.oxforddictionaries.com/definition/model>

Porter, M.E. (1983). Industrial Organization and the Evolution of Concepts for Strategic Planning: The New Learning. *Managerial and Decision Economics*, Sep 1983, 172 p.

Porter, M.E. (2008). 'The Five Competitive Forces That Shape Strategy,' *Harvard Business Review*, January 2008. Available at: [http://www.business.uwm.edu/gdrive/Goranova M/Readings 712/Porter%205%20forces.pdf](http://www.business.uwm.edu/gdrive/Goranova_M/Readings_712/Porter%205%20forces.pdf)

Qatar Airways Q.C.S.C. Consolidated financial statements, 31 March 2016. – Access mode: <http://www.qatarairways.com/iwov-resources/temp-docs/qatarairways consolidated financial statement 2015 2016.pdf>

Reichmuth, J. (2008). Analyses of the European air transport market: Airline business models, Air Transport and Airport Research, DLR, Germany, 240 p. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=0BA8F6BAC785E0E3106D671EA43B557E?doi=10.1.1.149.1442&rep=rep1&type=pdf>

Richardson, J. (2008). The business model: An integrative framework for strategy execution. *Strategic Change*, 17(5-6), pp. 133-144.

Shaw, S., Thomas, C. (2006). Discussion note: social and cultural dimensions of air travel demand: hyper-mobility in the UK? *Journal of Sustainable Tourism* 14 (2), pp. 209–215.

SITA, air transport communication and IT solutions. The annual SITA Air Transport IT Summit in Cannes. – since 2009. Airline IT Trends Survey. Airline Business magazine, 2009.

Skeels, J., (2005). Is airport growth a necessity or a luxury? Overall view of market growth. Report presented in ACI Annual Congress Munich, 2005.

Skytrax World Airline Awards 2010. Available at: <https://www rankingthebrands.com/The-Brand-Rankings.aspx?rankingID=270&year=506>

Stewart David W. and Qin Zhao (2000). Internet Marketing, Business Models, and Public Policy, *Journal of Public Policy & Marketing*, Vol. 19, No. 2 (Fall, 2000), pp. 287-296.

Teece, David J. (2010). Business Model, business strategy and innovation. *Long Range Planning* 43, pp. 172-194.

Tony Tyler Director General & CEO International Air Transport Association Annual Review 2015. 71st Annual General Meeting Miami, June 2015.

US LCCs: When will they resume growth? – Aviation Strategy, March 2010. Available at: <https://www.aviationstrategy.aero/newsletter/Mar-2010/3/US LCCs: When will they resume growth>

Vespermann, Jan, Andreas Wald, Ronald Gleich (2008). Aviation Growth in the Middle East - impacts on incumbent players and potential strategic reactions. *Journal of Transport Geography*, 16 (6), pp. 388–94.

Wall, R., Flottau, J. and Compart, A. (2009). Aviation growth in the Middle East – impacts on incumbent players and potential strategic reactions. *Journal of Transport Geography*, 16(6), 388–94.

Webster's Third New International Dictionary, Unabridged [Electronic resource]. - since 1828. - Access mode: <https://www.merriam-webster.com/dictionary/model>

Wensveen, J. (2007). Air transportation: A management perspective. 6th edition. England: Ashgate Publishing Ltd., 590 p.

Williams, George (2002). Airline competition: deregulation's mixed legacy. Aldershot, Hants, England ; Burlington, Vt. : Ashgate, 176 p.

Wirtz, Bernd, Oliver Schilke, Sebastian Ulrich (2010). Strategic Development of Business Models: Implications of the Web 2.0 for Creating Value on the Internet. *Long Range Planning*, Vol. 43, pp. 272-290.

Wirtz, Bernd W. (2011). Business Model Management. Design - Instruments - Success Factors. Gabler Verlag; 2011 edition (January 13, 2011), 142 p. Available at: http://alt.berndwirtz.com/downloads/BM_Extract.pdf

Wulf, T., C., Maul, B. (2010). Future Scenarios for the European Airline Industry. – Available at: http://www.scenarioplanning.eu/fileadmin/user_upload/imported/fileadmin/user_upload/DT_3_1_0_001_Komplett-07.pdf

Wulf, T., Meissner, P. (2011). A Scenario-based Approach to Strategic Planning – Tool Description – Scenario Matrix, HHL – Leipzig Graduate School of Management, Working paper No 12, January 2011, Available at: <https://pdfs.semanticscholar.org/d174/dcba3d6ec259aa2dce029693dba01436c299.pdf>

Zott, C. and Amit, R. (2007). Business Model Design and the Performance of Entrepreneurial Firms, *Organization Science*, Vol. 18, No. 2 (Mar. - Apr., 2007), pp. 181-199.

Zott, C. and Amit, R. (2008). The fit between product market strategy and business model: implications for firm performance. *Strategic Management Journal*, 29, pp.1-29.

Zott, C. and Amit, R. (2010). Designing Your Future Business Model An Activity System Perspective. *Long Range Planning*, 43, 216-226.

Appendix A

Emirates Airlines operation and financial results										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Passengers ('000)	17,544	21,229	22,731	27,454	31,422	33,981	39,391	44,537	49,292	51,853
ASK ('000,000)	102,337	118,290	134,180	161,756	182,757	200,687	236,645	271,133	295,740	333,726
RPK ('000,000)	77,947	94,346	101,762	126,273	146,134	160,446	188,618	215,353	235,498	255,176
Fleet	96	109	127	142	148	169	197	217	231	251
Average fleet age (months)	63	67	64	69	77	77	72	74	75	74
Passenger Revenue ('000, 000)	28,118	32,968	32,995	40,172	41,415	48,950,	57,477	65,405	70,013	68,029
PLF (%)	76.2	79.8	75.8	78.1	80.0	80.0	79.7	79.4	79.6	76.5
Breakeven load factor (%)	59.9	64.1	64.1	64.4	63.6	65.9	66.9	64.9	64.7	60.4
Yield, (\$ per RTKM)	216	236	254	211	232	251	249	250	245	218
Unit cost (fils per RTKM)	129	151	163	136	147	166	167	162	158	132

Destinations	87	99	99	102	112	116	133	142	144	153
Number of Departures (number)	92,158	101,709	109,477	123,055	133,772	142,129	159,892	176,039	181,843	199,754
Fuel and oil (`000,000)	2,049	2,996	3,932	3,242	4,457	6,614	7,584	8,355	7,812	5,372
Salaries and expenses (`000,000)	1,095	1,501	1,595	1,727	2,073	2,160	2,458	2,785	3,226	3,390
Maintenance & overhaul (`000,000)	136	171	185	230	280	352	507	584	688	684
Depreciation & amortization (`000,000)	369	463	602	807	1,001	1,126	1,398	1,748	2,027	2,178
Aircraft operating leases (`000,000)	792	974	1,034	1,119	1,175	1,304	1,610	1,783	1,884	2,201
Landing and associated airport charges (`000,000)	622	768	889	1,002	1,283	1,119	1,418	1,692	1,866	2,079
In-flight costs (`000,000)	367	480	523	593	627	772	860	960	1,057	1,120
Direct operating costs (DOC, `000,000)	7,034	9,355	11,160	10,861	13,284	16,466	19,135	21,341	22,580	20,888
Operating revenue (`000,000)	8,348	11,042	12,139	11,938	15,720	18,172	21,301	24,111	23,615	22,736
Operating Profit/Loss, before taxation (`000,000)	909	1,211	620	970	1,482	493	773	1,159	1,878	2,268
Gross profit/loss (`000,000)	843	186	1,366	963	1,463	409	622	886	517	1,176

Appendix B

Qatar Airways operation and financial results										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Passengers ('000)	8,000	10,000	12,020	14,450	16,102	21,000	23,100	22,000	22,352	26,654
ASK ('000,000)	28,010	35,559	65,008	71,340	85,400	98,940	109,000	126,767	143,212	179,208
RPK ('000,000)	21,008	26,341	50,310	56,857	66,694	69,534	82,454	95,977	126,767	151,980
Fleet	44	56	65	81	95	113	125	130	137	150
Average fleet age (months)	72	66	72	84	96	84	72	84	72	72
Passenger Revenue ('000, 000)	6,460	9,245	11,328	4,180	6,804	9,528	21,571	23,703	26,215	26,693
PLF (%)	79.0	78.1	77.4	79.7	78.1	75.6	79.9	84.13	80.1	80.0
Breakeven load factor (%)	61.9	65.7	63.4	65.0	63.6	65.1	64.9	66.7	65.0	65.2
Destinations	44	56	65	81	95	113	125	130	137	150
Number of Departures (number)	65,234	79,001	85,543	92,158	103,234	117,231	126,454	138,234	154,12	163,121

Fuel and oil (`000)	709,596	1,090,073	1,387,345	470,321	729,26	1,258,539	1,107,288	3,219,425	2,521,684	3,509,183
Salaries and expenses (`000)	308,557	465,326	506,052	51,987	65,541	85,092	1,073,235	1,243,781	1,471,251	1,796,707
Maintenance & overhaul (`000)	140,58	111,266	140,71	2,71	3,86	6,697	271,068	271,157	277,201	324,859
Depreciation & amortization (`000)	177,819	253,554	337,893	4,861	6,165	8,196	747,703	745,971	1,311,370	1,446,009
Aircraft operating leases (`000)	64,047	72,143	69,02	45,218	89,959	80,606	473,866	669,019	396,555	152,001
Landing and associated airport charges (`000)	249,513	320,241	369,428	351,171	472,638	168,763	200,055	221,77	300,904	265,775
In-flight costs (`000)	114,743	42,867	162,409	2,792	39,629	62,35	71,26	78,916	379,415	103,843
Direct operating costs (DOC, `000)	2,126,701	2,968,117	3,504,371	3,390,115	3,390,070	6,518,068	7,495,703	8,201,911	8,953,835	9,089,065
Operating revenue (`000)	2,195,018	3,204,223	3,916,591	3,845,451	5,286,457	6,700,565	7,490,644	8,266,102	9,222,895	9,576,543
Operating Profit/Loss, before taxation (`000)	171,611	-11,119	-62,28	204,035	219,448	-73,843	-45,597	-73,437	102,987	446,786
Gross profit/loss (`000)	89,119	297,752	484,81	525,756	530,387	308,465	138,906	216,807	302,855	837,67

Appendix C

Etihad Airways operation and financial results										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Passengers (`000)	4,600	6,000	6,300	7,100	8,300	10,000	11,500	14,800	17,400	18,500
ASK (`000,000)	17,034	25,345	37,943	45,200	51,000	61,000	71,100	86,600	104,800	113,900
RPK (`000,000)	11,921	19,008	28,070	33,400	38,700	48,000	55,500	68,600	83,200	89,500
Fleet	37	47	53	57	64	67	89	110	121	119
Average fleet age (months)	120	108	108	132	156	12	108	12	108	108
Passenger Revenue (`000)	1,209,855	1,987,851	1,976,545	2,381,089	3,049,883	3,438,000	3,837,000	4,656,000	4,900,000	4,900,000
PLF (%)	70	75	74	74	75.8	77.6	78	79.2	79.4	78.6
Breakeven load factor (%)	61.0	61.2	61.0	63.1	63.8	64.2	64.8	65.1	64.8	64.9
Destinations	87	99	99	102	112	116	133	142	144	153
Number of Departures (number)	92,158	101,709	109,477	123,055	133,772	142,129	159,892	176,039	181,843	199,754

Fuel and oil (`000)	599,467	1,094,075	919,797	1,169,532	1,422,820	1,816,000	2,217,000	2,687,000	2,987,000	3,237,000
Salaries and expenses (`000)	167,86	271,163	295,637	351,022	372,558	443,002	533,001	760,001	960,001	1,150,001
Maintenance & overhaul (`000)	230,773	267,953	281,541	266,117	213,168	188,001	336,001	525,001	765,001	905,002
Depreciation & amortization (`000)	123,008	167,197	201,172	251,131	287,764	344,001	404,001	385,001	455,001	705,002
Aircraft operating leases (`000)	97,749	108,745	121,101	148,381	143,956	220,001	270,002	371,001	479,001	623,001
Landing and associated airport charges (`000)	46,901	67,394	68,154	74,183	80,771	94,002	110,001	135,001	146,001	161,001
In-flight costs (`000)	107,824	138,131	146,215	137,501	147,956	152,002	167,002	224,002	345,001	414,001
Direct operating costs (DOC, `000)	1,776,546	2,638,283	2,540,790	2,929,809	3,321,414	3,956,000	5,004,000	6,276,000	7,245,000	7,876,001
Operating revenue (`000)	1,525,846	2,453,553	2,274,585	2,972,290	3,827,043	4,304,000	4,933,000	5,855,000	9,020,000	11,340,000
Operating Profit/Loss, before taxation (`000)	-638,339	-610,891	-925,645	-594,315	13,641	42,001	213,001	980,002	1,139,000	1,971,000
Gross profit/loss	-250,701	-184,73	-266,205	42,481	505,629	348,001	62,001	73,001	48,002	73,001